The United States MILLER

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THE GILBERT COMBINED REDUCTION ROLLER MILL.

We have the pleasure of presenting to our readers herewith a view of Gilbert's Combined Reduction Roller Mill, manufactured by Messrs. STOUT, MILLS & TEMPLE of Dayton. O. This mill is said to be the best combined reduction machine yet placed on the market and has been operating successfully for several months in several well known flouring mills. Thousands of millers, in all sections of the country have been waiting patiently for a combination roller mill that would do satisfactory work, and at the same time one that could be purchased for a sum within their means. The manufacturers believe that they have now produced just what these millers want.

The GILBERT MILL has six pairs of rolls and five separating sieves. The sieves having a lateral and vertical motion, causes them to act as an elevator, and while making the proper separation of each reduction, also carries the remaining stock from one pair of rolls to the next. The rolls are mounted in a strong iron frame. The boxes are babbitted and are self-oiling. There are two main driving belts, each of which is provided with a tightener, whereby they can be tightened independently of each other, and by which the machine can be instantly stopped.

The movable rolls are supported on a swinging arm, with suitable devices for leveling the rolls. The adjustments for setting the rolls are at the lower end of the swinging arm, in which there is a through shaft with eccentric connection, by the movement of which a pair of rolls at each end are thrown apart or brought into a proper position for granulating. The springs are located in the uprights of the frame and are given their proper tension by moving the nuts on the outside, and will not be unduly disturbed by the movements of the tempering wheels.

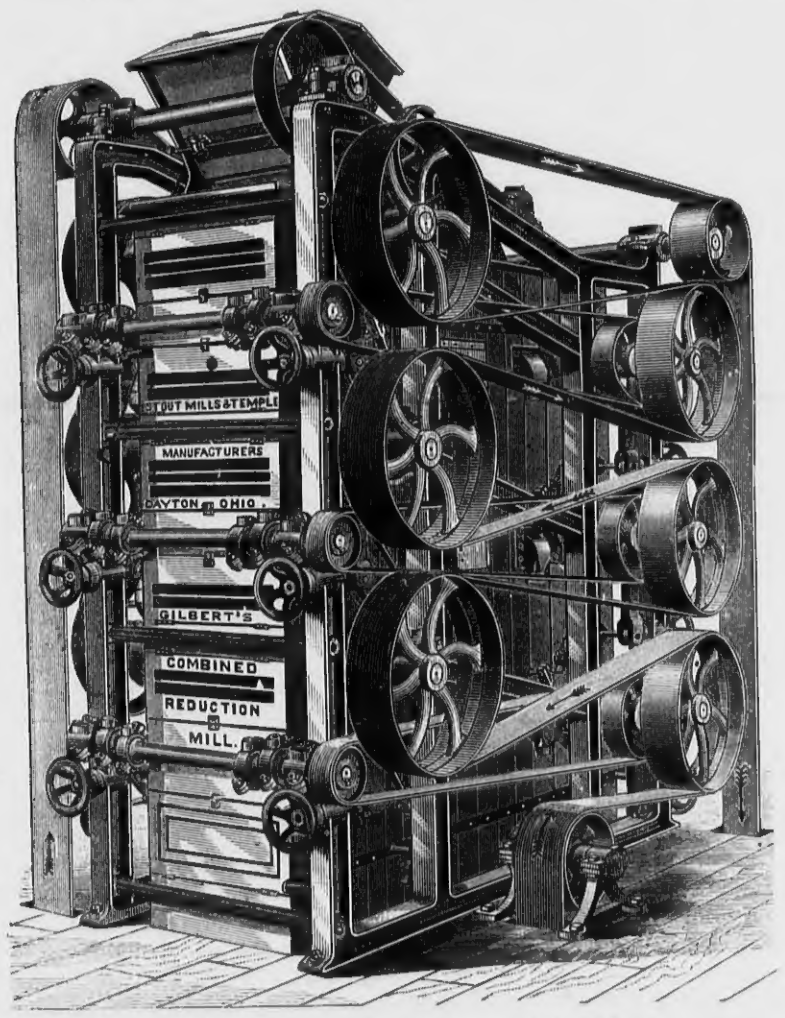
The hopper, which has a suitable device for shutting off and regulating the feed, is placed over the highest pair off rolls. The wheat passes through the first set of rolls on to a fluted sieve, which separates the middlings and flour from the broken wheat, and on falling through the sieve is caught and carried out of the side of the machine, the broken wheat passing up nine inches in the length of the machine and over the end of the sieve into an aspirator. The aspirator is located just above the rolls, and is connected with the fan on top of the machine by a spout. The suction is regulated by a valve on each aspirator and also by a valve on the fan, which removes the light fluff and branny particles. The broken wheat then passes through a second set of rolls, and over a second sieve and aspirator and so on for six reductions, when we have finished bran.

It is claimed that this mill makes a larger percentage of middlings and less break flour than by any other process, because it does away with all elevating, conveying and spouting, between breaks. The motion of the sieve is such that the stock travels in the air in moving, thus doing away with all sliding motion, which is necessary with a flat sieve or with a scalping reel. A great amount of cloth surface is obtained and the separations are excellent. The light fluff and bran moves on top, and does not became mixed with the middlings. The flour and middlings are removed before suction is applied so that no good stock is removed. In conclusion, it is claimed that this machine saves room, time, elevators, scalping, chests and reels, gives satisfactory results and is reasonable in price.

The *Grain Review*, St. Louis, says there are "25,708 saw mills in this country, turning out annually a product valued at $233,367,729," an average of about $9,000 worth from each mill. Judging by the produce of some of the big mills, there must be a host of *very* small ones.

THE DECAY OF PISTON RODS.

On this subject the *Mechanical World* (Manchester England,) says: That piston rods are liable to corrosion if they are suffered to remain at rest for a considerable period is well known, the corrosion taking place at the point of contact between the rod and the brass gland of the stuffing box. To obviate this action turning gear is always provided by which engines may be moved round at short intervals while the ship is in port. It is also known that the high-pressure piston rod in compound engines is subject to rapid deterioration while at sea, unless special care is taken to swab it with some lubricant, such as tallow and oil. If this be neglected the surface of the rod becomes grooved longitudinally or roughened, so that the stuffing box cannot be kept steam tight. The purpose of this article is not to deal with either of these forms of corrosion, but with



THE GILBERT COMBINED REDUCTION ROLLER MILL

one totally distinct, and concerning which very little has hitherto been known.

A case occured on the 18th of April to the Albert Victor steamship, the property of the Southeastern Railway Company, which left Boulogne for Folkestone at noon. About that date the accident became very notorious. She is a paddle steamer, 220-horse power nominal. On leaving the harbor the engines were put a full speed ahead, and she proceeded at a rate of 12½ knots an hour. About twenty minutes after she left the starboard cylinder gave way. The chief engineer immediately shut off the steam from the port cylinder, and when he attempted to shut it off the starboard cylinder the rush of steam from it prevented him, and he was obliged to go on deck. He succeeded in getting at the boiler stop valves, and it was found that the cover of the starboard cylinder had been blown off, the side had been blown out, and that the piston-road was out off its position. In the meantime the vessel was drifting before the wind and tide, and the master asked what prospect there was of getting the engines to work again, and was informed it would take about twenty minutes to disconnect the shaft.

The engineer failed, however, to get the port crank over the centre, and the Albert Victor was drifting towards the French coast. The captain dropped anchor, and a tug-boat arrived by which the Albert Victor was towed into Folkestone. On examination it was found that the piston had become loose on the rod, and when steam was admitted beneath it was forced violently up the rod, and striking the cylinder-cover with great force smashed it, and broke a portion out of the side of the cylinder as well. There was a Board of Trade inquiry into the circumstances, which resulted in making it perfectly clear that the accident had been caused by the decay of the piston-rod. The rod was secured in a piston in the way very frequently adopted still, and almost universally used in marine engines twenty years ago. The lower end of the rod was enlarged to form the frustum of a cone, with the small end next the crank end of the piston rod. This cone was nearly as long as the piston rod was thick. Above it was a screw of seven or eight turns, the treads standing up above the rod. The cone made a steam-tight fit in a conical hole bored in the piston when the rod was put through the piston.

A large nut was then dropped down the rod until it engaged in the screw, and by turning this nut the cone was drawn up firmly into the piston. A very good and workmanlike job can be made in this way. It is clear, that on the down stroke the cone takes all the strain, and the piston cannot be forced off unless it is first split; but on the up stroke the nut and screw take all the strain, and if the threads stripped the piston would move on the rod. On examination it was found that the screw-thread of the Albert Victor was corroded away. It had decayed, in fact, and the accident which we have described following as a direct consequence. It was contended during the inquiry that something had got into the cylinder, which the piston struck on the down stroke and so stripped the thread; but the commissioner, in giving judgment, repudiated this idea.

It came out in evidence, that as far back as 1876 the engines were completely overhauled, and it was then found that one thread of the piston-rod screw had been corroded away for a length of about eight or nine inches, but no importance was attached to this, because plenty of thread remained to hold the rod in its place. It will be understood that (once screwed down) such nuts are never slackened again save under exceptional circumstances; consequently they are of iron, as is the piston rod, so that galvanic action between the rod and the nut is not to be anticipated; but nevertheless, it is certain that in the case of the Albert Victor corrosion of some sort did take place. One of the witnesses suggested that brass from the gland might find its way down the rod and get into the thread in fine powder, but this presupposes a certain considerable amount of slackness of fit in the nut, and we hold this theory to be untenable.

The Southeastern Railway Company, taking warning by the accident, had the pistons of four vessels which had been built in 1861, 1862 and 1865, namely, the Victoria, Alexandra, Albert Edward and Napoleon examined, and the result was that in the Victoria and Albert Edward it was found that the threads of both cylinders were defective and required to be renewed; in the Alexandra and Napoleon the thread of one in each. It was also found—and it is a remarkable fact—that in either the Napoleon or Alexandra, we do not know which, the nut was so tight that it had to be split in order to get it off, and it was then found that the screw was in good condition. In one other case where the nut had to be split the screw was quite gone.

The fact, therefore, that the nut is tight is no evidence at all that the screw is in good condition. It appears to be almost impossible to form any sound conclusion as to the cause of corrosion. The most reasonable is that the grease used to lubricate the cylinder contains free sulphuric acid, which acid has been used to purify the tallow in a way well known, or it may be that oelic acid does the mischief. Grease works its way by capillary attraction into threads of screws and nuts, and the supply being kept up, in a series of years the iron would be finally eaten away as described. But plausible as this examination is, it does not take into consideration the circumstance that it is only the piston rod which is attacked, the nut remaining, as far as can be learned, uninjured. It is generally found, it is true, that when two pieces of iron in contact show symptoms of corrosion, one is found electro-positive to the other; but why, in all the five cases cited, the nuts should have escaped while the piston rods suffered, it is not easy to say.

No doubt the piston rods were of forged scrap. Whether the nuts were or were not we cannot say, but there is no reason to doubt that the texture of the two irons must have been different, and the results of an analysis of the rods and nuts which failed and those which did not would be very instructive. If it could be shown that when the metals were identical in chemical constitution and fibre no corrosion had taken place, then it would follow that nut and rod should be made from the same forging. The whole question is one of much interest bearing on the corrosion of metals in a very important way. For example: What is likely to be the effect of an iron nut on a steel piston-rod? The practical lesson taught is that an examination of the piston-rod fastenings of a very large number of steamers now afloat would be no more than prudent.

THE CORN CROP OF 1882.—The statisticians are still figuring on this important question, and the estimates vary to a remarkable degree. The UNITED STATES MILLER notes the following estimates, all of which have claims to reliability. The United States Agricultural Department places the yield at 1,680,000,000 bushels. The *Cincinnati Price Current* at 1,800,000,000 bushels. The *Farmer's Review*, Chicago, at 2,184,908,850 bushels. And Chas. F. Harding of Mansfield, Ohio, at 2,294,154,284 bushels. It would probably be fair to split the difference between the highest and the lowest ef these estimates. The result would doubtless be as near the actual yield as can be determined, that is 1,987,077,142 bushels.

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MILWAUKEE, JANUARY, 1883.

DURING the year 1882, Minneapolis flour mills manufactured 3,124,219 barrels of flour.

Mr. J. E. Loomis, of St. Louis, and Mr. Volkert of the firm of Volkert & Wagner, Jefferson City, Mo., made us a brief call Dec. 18.

UP to date 396 patents have been granted to Edison, the electrician. This is a larger number than ever before granted to one person.

We acknowledge the receipt of a handsomely framed lithograph of the Stevens Roller Mill, from The John T. Noye Manufacturing Co., of Buffalo, N. Y.

P. S. Crandall, the well-known millstone-builder and mill-furnisher, died Dec. 17, 1882, at his country home, Melrose, N. Y., aged 75 years. The business will be continued by Louis S. Crandall.

A considerable quantity of "Turkish winter wheat" has been raised in the West during the past season. It is a red, long-berried wheat, and much harder than other winter wheat. It is well liked by millers whose mills have been accustomed to use the hard spring wheats.

ACCORDING to the report of the United States Consul General at St. Petersburg, the Russian Government has greatly reduced the "free list" and largely increased the duties generally. The new tariff imposes upon flour of all kinds (except potato-flour,) an import duty of 24 cents ℔ cwt.

MUST the Bucket Shops go? It seems that committees have been appointed by the regular boards of trade in St. Louis, Chicago and elsewhere, antagonistic to the "Bucket Shops," and there is a probability that they will be compelled to quit business. The sooner, the better for the public.

G. H. Shape, Esq., of the great Schlitz beer bottling firm of Vœchting, Shape & Co., leaves Milwaukee for Europe January 8. Mr. Shape will visit his old home at Zeitz, Prussia, from which he has been absent thirty years. He intends to return in July next.—We wish him a pleasant journey and a safe return.

It is said that hollow steel shafting is being introduced into France. It is made by casting the metal round a core of lime, the ingot being finally rolled into shafting, the lime core going with it and diminishing in diameter in the same proportion as the metal, even when the total diameter is reduced as low as ¼ inch.

THE total exports of flour from San Francisco, as manifested at the Custom House during the month of November were 122,513 bbls., valued at $601,283. It was destined as follows: England, 64,983 bbls.; Ireland, 31,750 bbls.; Central America, 10,575 bbls.; China, 9,324 bbls.; Panama, 2,202 bbls.; Hawaiian Islands, 1,982 bbls.; Saigon, 500 bbls.; Mexico, 330 bbls.; British Columbia, 243 bbls.; Japan, 453 bbls.; South America, 120 bbls.

ACCORDING to Bulletin No. 304 from the U. S. Census Department, the number of flouring and grist mills in the United States in 1880 was 24,332, using capital to the amount of $177,361,878, and employing 58,407 persons to whom was paid $17,422,316. The raw material used was valued at $441,525,225 from which a product was obtained worth $505,161,712. These figures show an average of 2.4 persons per mill, each person receiving a yearly compensation of about $298. It shows also an average earning of each mill of $2,615 per annum.

A national exhibition of railway appliances is to be held in the Exposition Buildings at Chicago from May 31 to June 7, 1883. Railway tracks will be laid the entire length of the main building for the accommodation of cars and locomotives, and for use in making tests of railway appliances. It it also said that a series of scientific and practical tests, to be made by well-known scientists and carefully selected committees, extending to every article and every description of railway material susceptible of a trustworthy test, will constitute one of the most interesting as well as most valuable features of the exhibition. An official record of these tests and of every exhibit, including a list of the prizes awarded, will be published. The list of exposition commissioners includes a large number of the best-known railroad men in the country.

THE receipts of wheat at Milwaukee during December, show a very gratifying condition of the city's grain trade. Poor crops in the great spring wheat region tributary to this city, coupled with other causes made the market here rather dull for a while, but our unsurpassed facilities for the wheat trade and the good reputation of Milwaukee dealers, have great influence and will again make our fair city one of the great grain markets of the world.

THOSE who predicted at harvest time that wheat and flour would be a drug in the market at low prices, have probably changed their opinion by this time. Our home consumption is much greater than ever before, and our flour export shows a remarkable increase over last year. The rains, snows and floods in different parts of Europe have not only ruined much grain that was harvested, but have prevented the sowing of many acres for the next crop. It is safe to predict that we shall be able to realize a fair, but not a fancy price for all the wheat and flour we shall care to export.

THERE will be a good attendance at the Millers' National Convention to be held in Cleveland, O., Jan. 31, 1883. The following are the delegates from Wisconsin, E. Sanderson, S. H. Seamans, Charles Manegold and J. B. A. Kern, Milwaukee; John Schuette, Manitowoc; J. A. Kimberly, Neenah; W. S. Green, Milford; O. Puhlmann, Plymouth.

The Illinois delegation will consist of D. R. Sparks, Alton; C. H. Seybt, Highland; Henry Scheurmann, Germantown, P. C. Chapman, Pittsfield; C. B. Cole, Chester; and E. C. Kreider, Jacksonville.

ACCORLING to *"Die Muhle,"* a milling journal, published in Leipsic Germany, the German Millers Association offers a reward of a thousand *marks* for the best method of detecting adulterations in wheat and rye flour, whether consisting of organic or inorganic substances. Treatises on this subject, written in the English, German or French languages, and provided with a motto, will be received till May 1883, and should be directed to the President of the German Millers, Association, Prof. Jos. Van den Wyngaert, Berlin, Germany.

It is estimated by late writers that the present population of China is 250,000,000. Should the Chinese as a people become accustomed to eating bread made of wheat flour, the demand from China alone would take all the surplus the Pacific States are liable to raise for a century to come. The Chinese demand for American flour is continually increasing. During the month of October last, 16,290 barrels were shipped from San Francisco to China. California millers anticipate a large Chinese trade at no distant day.

POSTMASTER-GENERAL HOWE has signed a contract with George Ehrlich of St. Louis for a combination letter and envelope, which will be put upon the market about the middle of January, at prices varying from $2 to $4 per thousand, according to the quality of the paper used. All post-offices will be supplied, and a letter sheet and envelope and stamp can be had for three cents, and a circular letter sheet and stamp for one cent, adding the cost of manufacture.

THE total number of miles of new railroad built from the 1st of January last, up to December 15th, according to the *Railroad Gazette*, is 9,648 miles, against 7,601 miles reported at the corresponding time in 1881; 5,836 miles in 1880; 3,594 miles in 1879; 2,243 miles in 1878; 1,994 miles in 1877; 2,283 miles in 1876; 1,264 miles in 1875; 1,808 miles in 1874; 3,606 miles in 1873, and 7,065 miles in 1872. This year's mileage, so far, is more than one-fourth greater than that of 1881, and nearly eight times as great as that of 1875, when new construction was at its lowest point.

THE UNITED STATES MILLER gleans from the report of John Nimmo, Jr., Chief of the United States Bureau of Statistics, received December 22, 1882, the following facts. The total amount of wheat exported in November, 1882, was 8,825,845 bushels, valued at $9,334,753, against 9,707,810 bushels, valued at $11,577,373 in 1881. The wheat-flour export in November, 1882, was 862,831 barrels, valued at $5,131,986, against 483,795 barrels, $3,161,753 in November 1881. The total value of exports of breadstuffs, which include barley, Indian corn, corn meal, oats, rye, wheat and wheat flour, for the eleven months ending November 30, 1882, was $166,606,693 against $210,318,432 during corresponding time in 1881.

WE have received *The Southern Miller*, published twice a month, by the SOUTHERN MILLER CO., at Nashville, Tenn. Pitkin C. Wright is the editor. The subscription price is $2.00 per year. The new paper presents a good appearance, and will, no doubt, be cordially received by millers, in the South especially.

WE are pained to announce the death of Col. E. H. Gratiot, at Platteville, Wis., December 17, 1882, of paralysis. He was 65 years of age. Col. Gratiot's name is known to the milling fraternity everywhere, as the inventor and manufacturer of the Gratiot Wheat Heater. Col. Gratiot has been in poor health much of the time during the past three years or more. His eldest son, Charles Gratiot, is well known as the founder of the Gratiot Mill Manufacturing Co., of Chicago. His hosts of friends made during an honorably spent life, will hear of his departure from us with feelings of profound sorrow.

A LARGE BELT.—In the largest woolen mill in Belgium is a double belt, 75 inches wide and 153½ feet long, to transmit 650 horse power, indicated. The power is obtained from a Corliss engine, 800 horse power. From the fly wheel, which is 28 feet in diameter by 7 feet 9 inches wide, the force is transmitted direct to the weaving shed, which contains 1,000 looms, and spinning mill adjoining. The belt runs perfectly straight and gives entire satisfaction. It was made by an English firm.

A PUMP THAT WOULDN'T STOP.—A man erected some kind of a new fangled pumping apparatus for a rancher at Paradise Valley, Nevada. The pumping machine was to be driven by wind. The other day, when a ten knot breeze was blowing, the inventor "turned her loose." In about half an hour the machine flooded the cattle corral with water and floated away the butt end af a hay stack. The ranchman yelled to his machinist: "Stop her! stop her!" but it happened that provision for stopping was what the inventor had not thought of. Had it not been that the well was soon pumped dry the whole ranch would probably have been washed away Even after the well was dry the machine threw up mud and gravel so wicked that to approach it was unsafe. The rancher now says: "It is a good pump—a wonderful pump—but it needs a regulator."

VALUE OF SMOKE.

A Company at Elk Rapids, Michigan, which manufactures fifty tons of charcoal iron a day, formerly allowed the smoke made in burning the coal to go to waste. Now the smoke as it is formed is delivered into stills charged with lime and surrounded by cold water, the result of the condensation being, first, acetate of lime, second, alcohol; third, tar; the fourth part produces gas, which is consumed under the boilers. A thousands cords of wood are converted into charcoal daily, yielding 2,800,000 cubic feet of smoke, from which are obtained 12,000 pounds of acetate of lime, 200 gallons of alcohol, and 25 pounds of tar. The alcohol has been contracted to a firm in Buffalo, N. Y., for five years, they furnishing the packages and receiving it at the works at eighty cents per gallon.

UNITED STATES vs. RUSSIA.

THE grain producers and dealers of the United States have long regarded Russia as their greatest competitor for supplying the grain deficiencies of Europe but it seems that the time has at last arrived when Russian producers and dealers acknowledge that they can no longer compete with us. Our naturally fertile acres, intelligently cultivated by machinery, and our great facilities for rapid and cheap transportation are not to be contended with by a country like Russia whose agriculture is yet in a primitive state, and its transportation facilities yet in their infancy. The St. Petersburg correspondent of the *N. Y. Sun* says: "Russia has 'thrown up the sponge' in the contest for supremacy as the grain market of the world. Russian farmers and grain dealers and the public at large are panic-stricken. Millions of peasants have hastened to sell their grain in order to pay arrears of taxes and other debts. Prices have been exceedingly low and now many of them are penniless and have no provision for the winter. The Minister of the Interior has admitted that he has not means enough to save the peasants from starvation and to provide them with seed for future crops.

FLOUR PRODUCTION IN MILWAUKEE FOR 1882.

The following figures, obtained by the UNITED STATES MILLER directly from the mills, show the production of flour to have been during the year 1882, as follows:

	PRODUCT IN BBLS.	DAILY CAPACITY.
Phœnix Mills, (E. Sanderson & Co.)	291,280	1,400
Eagle Mills, (J. B. A. Kern & Son)	250,000	2,200
New Era Mills, Cherry St. Mills, (New Era Mill'g Co.)	235,000	1,200
Star Mills, (Nunnemacher Co.)	198,000	650
Reliance Mills, Ontario Mills, (C. Manegold & Son).	97,000	250
Daisy Roller Mill, (E. P. Allis & Co)	80,000	300
Centennial Mills, (Wm. Gerlach & Co.)	78,000	300
Empire Mills, (S. H. Seamans & Co.)	52,700	400
Gem Mills, (Gem Milling Co.)	42,000	300
City Mills, (Durant Estate)	24,862	250
Cream City Mills, (Matt. Keenan)	00,000	150
Total	1,348,842	7,850

The Cream City Mill has not been in operation during the past year, and the Ontario Mill has been working mostly on rye, feed and grain cleaning. All the mills have been shut down for repairs, remodeling etc., a considerable portion of the time. The Milwaukee Mills on River street have been destroyed during the year. The present total daily capacity (24 hours) of all the mills is 8,850 or for a working year of 312 days, 2,449,200 barrels. The product for 1882 is far in excess of any previous year.

BOOK NOTICES.

THE BUILDERS GUIDE AND ESTIMATOR'S PRICE BOOK. By Fred. T. Hodgson. Industrial Publication Company, 49 Maiden Lane, New York. Cloth. Price $2.

This is a book that fills a gap in building literature. It is sure to be welcomed by all who have anything to do with estimating the cost of building, and will prove exceedingly valuable to insuranse valuators and persons who are about to build.

The work appears to us, to be almost exhaustive, as not a single item required for building purposes seems to have been omitted. A large number of useful tables, memoranda, data, and rules are embodied in the volume, rendering it much more valuable to the practical builder, than it would be if it was simply only a guide to current estimating.

COPP'S AMERICAN SETTLER'S GUIDE, published by Henry N. Copp. Washington, D. C. Price, paper, 25 cents; cloth 75 cents.

This is a book of valuable information to all persons intending to locate on public lands.

HARPERS MAGAZINE.—Published by Harper & Brothers New York. Subscription price $4,00 per year.

THE CENTURY MAGAZINE, published by *The Century Co.*, New York. Subscription price $4,00 per year.

THE YOUTHS COMPANION of Boston, is a springtly, entertaining paper, deservedly popular, and is, without exception, the best of its kind published in Amerika. It is filled to overflowing with the choicest original matter, of so diversified a character that it never fails to interest, instruct and amuse, and is welcomed in the household by old and young alike. Serial stories will be contributed to the *Youth's Companion* during the coming year, by W. D. Howells, William Black, Harriet Beecher Stowe and J. T. Trowbridge. No other publication for the family furnishes so much entertainment and instruction of a superior order for so low price. Subscription price $1,75 per year.

THE FOREIGN MARKET.

HARRIS BROS. & Co., 6 Crosby Square, London, under date of Dec. 14, write:

Wintry weather lasts and seeding operations are abou at an end until Spring; supplies of home-grown grain are very good, but foreign does not come in as freely as it did, closing of North Russian ports of course having some effect. Wheat since our last has not varied much, holiday times being near and buyers doing as little as possible except keeping up stocks at present moderate rates. Flour of good useful quality sells well, whether European or American (and they compete sharply), but low grades are still a drug. Millers in many places call out at the large imports of foreign Flour, which they find telling sharply against them. Maize may be written very much as last week, on the spot and near at hand showing a very different range of price, of course, to distant cargoes for shipment next year contracts. Barley is plentiful, and can be bought cheaper than last week as it arrives, and for cargoes on passage. Oats are very firm, as is natural from so many ports in the North of Europe being closed.

DUNLOP BROS., of 100 Wellington St., Glasgow, write Dec. 13 as follows:

With severe frost and dense fogs prevailing, business has been decidedly quiet during the past week. Arrivals of Flour liberal; Wheat, Maize and other articles light.

To-day's Market was moderately attended; but owing to the darkness, there was little or no business done, except on well-known brands and parcels. Wheat firm, and the turn dearer. Flour rules quiet for all grades, and is nominally unchanged in value. Maize 6d. to 9d. per 280 lbs. cheaper on the week; while Barley, Oats and Pease are firm at late rates,

GIBSON & CLARK, 31 Waterloo St., Glasgow, Scotland, under date of Dec. 13, write:

The weather during the past week has been extremely cold.

Our imports from abroad have been large of Sack Flour and Barley, but small of other articles.

The trade during the week has been dull, but prices have been well maintained for all articles.

To-day, owing to fog, our Corn Exchange was thinly attended, and only a small business was done at 3d. advance on best kinds of Spring and Winter Wheats. Flour steady. Barley, Oats, Beans and Peas unaltered. Maize 6d. to 9d. lower on the week. Oatmeal firm.

THE Haxall Crenshaw Co., of Richmond, Va., have ordered additional Stevens rolls of the sole and only manufacturers, John T. Noye Mfg. Co., of Buffalo, N. Y. They are satisfied of their superiority over all oth

ROLLER MILLS.

BY THEODORE VOSS. (LONDON.)

THEIR PRESSURE AND LEVER ARRANGEMENT.

The advocates of stone milling have had much to say lately with regard to the heat evolved in roller mills, and it has become their standing argument, that during its passage through the rolls the semolina will be roasted and thus be deprived of its natural oil.

The advocates of roller milling on the other hand, contend that, even if some heat is evolved in crushing semolina on smooth roller mills, it is not only less than that evolved in stone grinding, but also that the contact of the roller surface with the semolina is so instantaneous that it cannot be subjected to any excessive degree of heat during its passage. They say, if anywhere the grinding material is roasted, it must be during the long contact and the intense friction of the meal with the grinding surfaces of the stones. It must be borne in mind, of course, that both parties are referring to well constructed and well managed machines. It would be unjust to compare the results of badly constructed and badly managed roller mills with those of first class millstones under good management, or *vice versa*.

There are very many good and well managed millstones in this country(England), but as yet only few good and well managed roller mills. The practical experience of generations of millers has been embodied in the construction of millstones, but only few millers have as yet had an opportunity to work with roller mills, and to cause improvements to be made in these new machines in accordance with their practical experience. It is therefore scarcely to be wondered at, that roller mills should have, up to the present, often met with adverse criticism from those who are unable to comprehend their real advantages, because they lack as yet that familiarity with them, which influences them in favor of their old friend, the millstone. They know what they can achieve with a first-class millstone, but they do not yet know what can be done with a first-class roller mill. Besides, there is one point which has the greatest influence on the results of roller milling, that is, the condition of the wheat. If the wheat to be ground be *hard* and *dry*, the main advantage of roller mills, that is their *bran preserving tendency*, will be most apparent, whereas their weak point, their *compressing tendency*, will not have any injurious influence, hard and dry wheats being easily pulverized by crushing without caking. If, however, hard wheats are ground on millstones, their weak point, the *pulverization of bran*, is most apparent, and their advantage, the production of *granular flour* without compression does not have any special influence. This condition is reversed for soft and moist wheats.

The bran reducing tendency of stones is not very apparent with the tough husk of soft and moist wheats, but their advantage, the production of granular flour through the rubing action of their grinding surfaces, becomes highly important.

Roller mills treating soft and moist wheat will of course have the same bran preserving action as before, but it cannot be denied that their compressing tendency causes not only the semolina to cake much and thus *prevents* the production of a granular flour, but it also presses much white floury matter so *firmly* to the husk, that it cannot afterwards be separated in the dressing machines and thus goes into the pollard.

This compressing tendency of the rollers, therefore, only becomes injurious during the treatment of middlings and semolina from soft and moist wheats, and even there it can be, to a great extent avoided by using greater differential speed.

It must be remembered that the differential speed at present in vogue has come to Great Britain and Ireland from Austria-Hungary, and has therefore naturally been adapted to hard wheats.

But an increased differential speed will do much to avoid the caking tendency of soft wheats, and those British and Irish millers therefore, who use mostly soft wheats will in time find that they will get better results with greater differential speed in their smooth rollers.

Indeed, there is no doubt that one day there will be special roller mills for semolina from soft wheats and for semolina from hard wheats, or else they may be so arranged as to vary the differential speed according to requirement.

A further important point is the feed of the roller mill.

At present most of them are overloaded. It should always be borne in mind that middlings are most easily crushed if there is a *free space* round each individual grain, so that in passing between the rolls the broken particles of this grain can easily move sideways without being subjected to excessive compression.

If the semolina particles have freedom to spread, the will produce a sharp granular flour, but as soon as the feed becomes excessive a compression of the broken particles takes place which must injure the baking quality of the flour.

The baker wants a lively granular flour which is not compressed and therefor *easily permeated* by water.

Such flour facilitates the formation of those little bubbles of carbonic acid gas which cause the sponginess of bread.

It stands to reason that if the flour is not granular, that is when the small flour particles have been *excessively* compressed, that it will not be so thoroughly permeated by the water. Therefore not so much gluten will become available to enclose and hold back those carbonic acid gas bubbles which make the bread digestible.

Roller mills should be fed so that there is a free space betwen the semolina particles equal to their diameter.

Supposing a semolina particle was a small cube of 1–32 inch, and the rolls were set at a distance of 1–128 of an inch. Then, if each semolina cube had freedom to spread, it would become a flat cake (consisting of broken particles, with the dry wheat) of 1–128th of an inch thick and 1–16th of an inch square. Hard wheat will thus be easily disintegrated without being subjected to injurious compression, but soft and moist wheats, which are not so elastic, must undoubtedly suffer some compression during their passage between the rollers, and only by greater differential speed can this compressing action be avoided.

But as soon as roller mills are overloaded, that is if the semolina or middlings have no freedom to spread, there occurs serious compression and there can be no doubt that by repeated rollings such semolina becomes so greatly compressed that it is not thoroughly permeated by the water during kneading.

With regard to the smallest distance of the rollers it may be observed that as the meshes of No. 13 silk are 1–130th of an inch square and those of No. 14 silk 1–140th of an inch square, that for smooth rolls treating fine semolina 1–144th of an inch may be considered as the minimal distance. Coarser middlings vary in size from cubes of 1–16th to 1–48th of an inch and 1–96th of an inch may be accepted as a suitable minimal distance.

Rollers must never be allowed actually to touch each other, if they do they will grind each other, thereby evolve excessive heat and unnecessarily compress and heat the semolina particles.

For the fluted break rolls the following table may serve as an illustration of the suitable minimal distances of such rollers, although of course they must in each case be adjusted to the class of wheat ground :

I. Break 1–16th of an inch.
II. Break 1–32nd of an inch.
III. Break 1–48th of an inch.
IV. Break 1–64th of an inch.
V. Break 1–96th of an inch.

If the proper attention were always bestowed on this point and the feed not allowed to overcrowd on the working surface of the rollers, there would be very little heat evolved and the semolina particles not being so much compressed a much better flour would be produced.

Also much less pressure, and consequently less motive power would be required as is shown in the following investigation, which will serve to give an approximate idea about the necessary pressure for roller mills working with proper feed.

The working mode of fluted rollers is a very simple one ; it is mostly a shearing action, and only sufficient presssure is required to press the sharp edges of the flutes into those particles that are in contact with both working surfaces. Most of this pressure, therefore, has to be exerted in the direction of a tangent on the roller surface, and can therefore he supplied "direct" by the belt on the driving pulley Very little "pressure" has to be supplied "indirect" against the roller surfaces of "fluted rollers" by means of springs on weights acting against the bearings.

Professor Kick found that it was necessary to apply a gradually increasing pressure of 4½ to 5½ on a knife, in order *to cut* a grain of wheat in to parts across the middle, and a pressure of 5½ to 7½ lbs in order to cut a grain of wheat longitudinally along the crease. For *shearing* a grain of wheat, a gradually increasing pressure up to 19.8 lb. was required, and for *crushing* a grain of wheat betwen two steel plates a gradually pressure up to 22lb caused rupture of the grain.

[TO BE CONTINUED.]

TECHNICAL SCHOOL IN PARIS.

In 1872 the municipality of Paris established a free public apprenticeship school for the education of workers in wood and iron, which has been so successful that $400,000 has been recently voted for the establishment of similar schools in various parts of the city. The course of study covers 3 years and the instruction is divided into general and technical. The general course includes the elements of mathematics, physics, mechanics and chemistry in their relation to industry, also explanations concerning the tools, the materials, the processes and the products presented by the range of practice of the workshops. During the summer, visits are paid to industrial establishments, of which the scholars give an account in writing

The trade instruction in the workshops is subdivided into two courses. In the first the pupils are taught the nature and condition of materials. In the second, they pass to actual construction. During the first 2 years, 6 hours daily are spent in the workshop and 4 in the school. In the third year, 8 hours are spent in the workshop and 2 in the school.

M. Tolain, president of the commisson having the subject under consideration, in his report, says: "In consequence of the virtual abolition of apprenticeship in most trades, and owing to the specialization and subdivision of manufactures recently from the introduction of machinery, the number of skilled and intelligent workmen in all branches of industry and art manufactures has decreased, and the standard of technical knowledge has been lowered." This, he considers, has been especially prejudicial to French manufactures, the distinguished merit of which, he believes, to have consisted in originality of design. He believes that the remedy for these evils will be found in the establishment of apprenticeship schools, the object of which should be mainly, not the creation of foremen, but the theoretical and practical education of workmen proper. Among the schools to be founded is one for the furniture trades, to form workers in wood, who would become chiefly cabinetmakers and upholsterers, but also carpenters, joiners and woodcarvers; and workers in iron intending to become general smiths and workers in metal for the same trade and for decorative purposes.

We are thoroughly of the opinion that a school of his kind should pertain much more of the workshop than of the school, and that the teachers who are brought in direct contact with the pupils should be mechanics who have, for several years at least, earned their daily bread at the bench or forge. Kid-gloved teachers will always fail when teaching the hard matter-of-fact operations.—*Builder and Woodworker.*

J. T. WALTER'S DOUBLE CURRENT MIDDLINGS PURIFIER.

In the December number of the *United States Miller* a descripton was given of Walter's Double Current Middlings purifier which was correct so far as the earlier machines were concerned but in the latest improved machines the Collins Automatic Cloth cleaner is used for cleaning the cloths. This cleaner consists of very fine leather, or any other material sufficiently flexible to hang down, when not in motion, but when in motion is thrown out by centrifugal force so as to gently tap the cloth the entire width of the screen. It travels across once every three minutes or more if desired. Mr. Walter, says: "I guarantee it not to paste the cloth like the brush or cut it like the cords, as any miller will testify who has ever used the traveling brush or the cords and then tried the flexible beater."

In explaining the method of driving the beaters, Mr. Walter says: "The carriage in construction is entirely of iron, the tracks on which the trucks rest being on the outside of the machine and do not crush the middlings into flour, as is the case where the tracks or guides are under the cloth, so that the middlings fall on them. Another advantage is, the carriage is driven by a lever, which drives it back and forth, and is worked from the outside of the machine, thus avoiding any possible danger of carrying specks from the tail to the head of the machine or carried to the outside of the machine by belts running through the machine."

Mr. Walter furnishes each person buying one of his purifiers with a written guarantee "to defend the purchaser against the claims of any and all parties—claiming infringement of patent." The *Walter* double current middlings purifier is becoming well known and gives much satisfaction wherever tried—Full particulars can be obtained by addressing J. T. Walter, Easton, Pa.

THE MATE OF THE "MARK TWAIN."

A humorous paper on Mississippi River travel, in the January CENTURY, is entitled "The Trip of the "Mark Twain," and is cleverly illustrated by Peunell. A typical character of river life is allowed to speak for himself as follows:

THE first mate of the vessel, he of the fur cap, was a character. It was appropriate to find him in the *Mark Twain*. He was bald and looked very old, but declared he was thirty.

"Ef you had ben through what I hev, my travelin' stranger," quoth he, "you too woould look like an example of the longest kind of long-gevity. My name figures prominently in history. I've been published in four hundred and thirty-nine newspapers and one almanac. I've been blown up by steamboats in twenty-two States and several territories. On most occasions, everybody on board perrished except my self. Pieces of my skull is layin' round losse all up and down this river, and numerous of its tributarrys. Awful? Yes. Once I was aboard the *Obiona*. I knew we were goin' to bust that afternoon, for it was about bustin' time with me, and bust we did. When I come down I couldn't find nothin'. Every thing had blowed to dust, or gone so fur that nothin' was within visible distance. But, bless you!—that's nothin'. Minor catasterfies? Oh, yes. Once we smashed a wheel against a snag. Of course when we progressed we went round and round, and so went round and round all the way down to New Orleans, describin' circles the whole time. We all got orful headaches owin' to the centripetal tendency of the periphery."

RECENT MILLING PATENTS.

The following patents were issued Nov. 28, 1882 :

Feed Mill, Thomas C. Cadwgan, Springfield, Ohio.

Calculator for Millers' Use, James R. Haight and J. M Segur, Adrian, Mich.

Flour-packer, Joseph B. Martin, assignee to Howes Babcock & Ewell, Silver Creek, N. Y.

Turbine Water Wheel, T. H. Risden & W. W. Tyler, Mt. Holly, N. J.

Pneumatic Grain Elevator, Lyman L. Smith, Kansas City, Mo.

The following patents were issued December 5, 1882:

Hominy Mill, John C. Klauder, Philadelphia, Pa.

Machine for reducing grain to flour and middlings, Charles S. Rider, Canton, O.

Grain Elevator, Orlando D. Spaulding, Eau Claire, Wis.

Grinding Mill, John Stevens, Neenah, Wis.

Middlings-Purifier, Albert Williams, Hannibal, N. Y.

Barrel-storing Warehouse, Robt Stewart, Baltimore, Md.

The following patents were issued December 12, 1882.

Middling detacher and granulator, Charles Brown, St. Louis, Mo.

Mill stone dress, Elgin L. Konklin, Coning, N. Y.

Process of and apparatus for hulling oats, Geo. H. Comack, Rockford, Ill.

Bolting-chest, Nicholac Cornelius, St. Louis, Mo.

Grain Decorticator, Peter M. McChesne and J. W, Craig, Washington, D. C.

Cover for mill hoppers, W. M. Griscom, Reading, Pa.

Ventilating grain, John K. Street, Waco, Texas.

The following patents were issued Dec. 19, 1882:

Automatic Grain Measure, John A. Knowles, Towanda, Illinois.

Roller Grinding Mill, J. Morton Poole, Wilmington, Del.

Attrition Mill. Thos. L. Sturterant, Farmingham, Mass.

LATE ITEMS.

DEAD—Wm. M. Smith, miller at Fleming Pa.

FAILED—Amos B. Hostetter, miller at Landis Valley, Pa

WITHERSPOON & Barr, at Princeton, Ind., through John Webster, the ever reliable millwright, have placed an order with the sole and only manufacturer of the celebrated Stevens roller mills, The John T. Noye Mfg. Co., for a full line of break rolls.

GEHLEN Bros., at LeMars, Iowa, have placed an order with The John T. Noye Mfg. Co., of Buffalo, N. Y., for additional Stevens rolls.

MR. Henry Oswald, of Minneapolis, Minn., has recently placed an order with The Jno. T. Noye Manufacturing Co. of Buffalo, N. Y., the sole and only manufacturers of the Stevens rolls, for three additional pairs for use on bran and germ.

AT New Minden, Ill., Messrs. J. W. Hohlt & Co. are putting in five pairs of the Stevens rolls, in their mill. The John T. Noye Mfg. Co., of Buffalo, N.Y., will fill the order.

AT Perry, N. Y., Messrs. Tomlinson & Son are remodeling their mill, and have placed an order with The Jno. T Noye Mfg. Co., of Buffalo. N. Y., for eight pairs of the celebrated Stevens roller mill.

AT Chillicothe, Mo., Geo. Millbank is making some improvements in his mill, and has ordered of The Jno. T Noye Mfg. Co , of Buffalo, N. Y., two pairs of Stevens rolls.

MUSCATINE, Iowa, also comes in for its share in the roller boom. Messrs. Schreurs Bros. having ordered a full line of Stevens roller mills, of the sole manufacturers, The Jno. T. Noye Mfg. Co., of Buffalo, N. Y.

R. L. Frazee, at Pelican Rapids, Minn., has ordered Stevens roller mills of The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for grinding middlings.

PENFIELD, Lyon & Co., at Oswego, N. Y., clinch their frequently expressed opinion of the superiority of the Stevens rolls over all others by ordering of the sole and only manufacturers, The Jno. T. Noye Manufacturing Co , of Buffalo. N. Y., additional rolls for grinding middlings.

MESSRS. Clark & Maynard, at Hunter's Creek, Mich., have ordered Stevens rolls of The John T. Noye Manufacturing Company, of Buffalo, N. Y., one pair of rolls for crushing middlings.

S F. Stambaugh, Sharon, Pa., is putting in more Stevens roller mills, to be built by The Jno. T. Noye Mfg. Co., the sole and only manufacturers.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., are meeting with a large demand for their new four-break reduction machine. Among others they have recently sold one to Mr. A. J. Morris, of Pemberton, N. J., together with other rolls necessary to fit his mill out in good shape on the Roller system.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, JANUARY, 1883.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY for 1882, was completed, ready for delivery February 1, 1882.

It shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,188. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 231, California 209; Colorado, 52; Connecticut, 300; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennessee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia 401; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances, This work is indispensible to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

THE high price of corn has been a bad thing for the glucose factories, many of which have either shut down entirely or running only a part of the time.

The wheat export trade via New Orleans is increasing at a wonderful rate. During the months of September and October, 1881, the New Orleans wheat exports amounted to 358,839 bushels, and during the same months this year they were 2,801,582.

Among the most valued journals coming to our table BRADSTREET'S is considered by us one of the very *best*. Every miller, merchant, banker or manufacturer will find it of great value to him—it will be money in his pocket to take it regularly and study it carefully. The Journal can be had for $5 per year by addressing THE BRADSTREET CO., 279 Broadway, New York.

An Inter-national Exhibition will be held in Amsterdam, Holland, commencing, May 1, 1883. Mr. S. A. Wheelright, New York, General U. S. Agent for the Exhibition, has recently issued a circular urging American manufacturers and producers to be fully represented. Our trade with Holland has increased from $9,896,732 in 1875 to $32,154,813 in 1881. Holland is a large importer of American bread-stuffs and dairy products, machinery and Yankee notions.

The UNITED STATES MILLER learns from the report of Chief Jos. Nimmo, of the U.S. Treasury Department, dated Nov. 28, 1882, that the total exports of the United States for the twelve months ending Oct. 31, 1882, of merchandise, coin and bullion, was of the value of $796,851,091; imports during same time, $774,383,232; exports in excess of imports for same time, $22,467,859. During the twelve months ending Oct. 31, 1881 the total exports were $888,571,910; imports, $740,887,371; excess of exports over imports, $147,684,539.

UNITED STATES Judge Caldwell, of the Eastern District of Arkansas, rendered a decision Dec. 7, involving the liability of parties who had bought cotton on futures from the Tennessee Brokerage Association, in this city, for delivery in New York, March 1881. The contracting parties had ordered that their purchases should be protected, and not be permitted to exhaust the margins. Cotton declined rapidly at the time and the Helena parties threw up their contracts. Suit has been brought for margins due on the contract up to the time when the Brokerage Association was notified to close them. Judge Caldwell decided in favor of the Brokerage Association, on the grounds that the transactions were legitimate and the contracts exhibited in court were valid ones.

INDIA WHEAT.—The most recent reports give the amount of wheat exported from Bombay, from January 1, 1882, to Nov. 7, 1882, at 12,589,055 bushels, against 16,899,627 bushels during the corresponding period in 1881. The wheat export from Calcutta from January 1, 1882, to Sept. 14, 1882, were 6,030,488 bushels. The receipts at the India seaboard from inland points are small, owing to the high railway tariffs, and it is said the natives have refused in many instances to sow wheat. The railroad tariff on wheat from 800 miles inland to Bombay, are said to equal the entire rate from Chicago to Liverpool.

[Translated from *Der Walzenmueller*, Vienna, Austria, for the UNITED STATES MILLER.]

MILLING IN ANCIENT TIMES.

In ancient times no mills, even of the simplest form were used, and no other means of making flour were known, than to grind the roasted grain in mortars. The mortar and pestle were generally made of wood, the latter sometimes iron-shod, and the mortar corrugated and the bottom furnished with iron-points. The flour manufactured in this way was by no means fine; and if a finer quality was required it was produced by introducing into the mortar a finer iron-lining. The work was generally performed by female slaves, but frequently male prisoners were used for this purpose.

Mills were, however, invented very early. Even in Genesis we find them mentioned, and the ancient Greeks ascribed their invention, sometimes to the goddess Demeter (among the Romans called Ceres), sometimes to one Mylas, from whom the name of the apparatus is said to have been derived. He is reported to have founded a sanctuary to the "Mill-Gods," and was himself honored as a hero. Even Homer mentions mills, although only hand mills, on which the female slaves performed the grinding. By degrees improvements were made, and, according to the motive power employed, they were distinguished as hand, horse, and water mills. The method of grinding, however, was the same in all of them, and the mill was invariably made up of two stones, of which the upper was movable and the lower stationary. Such mills have been preserved from ancient times, and in the Orient they are still in use.

As long as milling was not introduced or recognized as a trade, the mills remained in the houses and were worked by the female slaves while singing. But when milling became a regular trade, slaves and prisoners were employed in performing the hard work, which went on both day and night. In order to prevent the laborers from putting any of the flour in their mouths while working, and perhaps also for the purpose of causing them still greater sufferings, they were provided with a wooden collar. After the introduction of Christianity these "blood mills," as they were generally called, were abolished. In consequence of the constantly increasing demands made on the millers, human power became insufficient as a motor, and in place thereof animals were introduced, such as worn-out horses, asses and mules. Necessarily the mills driven by animals were larger than those intended for men, and the animals were tied to a beam, which passed through the runner stone, and an instrument similar to the one mentioned as in use for men prevented them also from enjoying an extra meal of stolen flour. Better by far were the water mills, which first appeared at the time of Mithridates, King of Pontus in Asia Minor, who was engaged in war against the Romans from 88 to 66 B. C., but were unknown in Rome until the time of the Emperors, in the first century A. D. They did not, in fact come into general use before the fourth or fifth century. The principal mills in Rome, on Mount Janiculus, were driven by water from an aqueduct. In the sixth century, when Witiges, King of the Goths (535,) besieged the Roman General Belisarius in Rome, and blocked up the aqueducts leading to the city, Belisarius constructed rafts, which he placed on the river Tiber, and erected thereon mills, driven by the current, and thus shipmills were invented which were even used at a later period. To combine baking and milling in such mills was manifestly difficult, and since that time undoubtedly, these two trades were separated. In the absence of any definite date regarding the further introduction of wind mills, it may be stated at once that this kind of mills is first mentioned in 1105. In early times it was necessary to procure a special license for the erection of a mill. Originally everybody had the right to establish mills on his own or on public water courses, but in the middle ages the feudal lords took possession of the milling privilege, and only the sovereign of a country enjoyed the right of erecting mills. This right could be acquired by private parties only by buying the concession from the crown at a certain stipulated price. This circumstance gave rise to privileged mills which were established, upon which the right to perform all the milling in a certain district was conferred, and the inhabitants prohibited from employing any other miller. In the middle ages, the millers, seldom placing their vocation in the cities, did not constitute a guild or fraternity like other tradesmen; on the contrary they were often, even in comparatively late times, looked upon as engaged in a nefarious business, so that their sons were refused admittance as apprentices in other trades formed into guilds. This injustice was, however, remedied as time went on. In the olden times, to which we now return, all flour that needed to be particularly fine, was put through the mill a second time, or else sifted. Most in use was barley—or wheat flour, and by the ancient Romans also spelt (or German wheat). Rye did not suit the taste of the ancients and was considered even indigestible. Pearl-barley was prepared in the same manner as flour, by grinding it in wooden mortars lined with iron, and in order to give it a white color, it was mixed with alumina.

THE WISCONSIN CENTRAL RAILROAD.

We have the pleasure to announce that the Wisconsin Central Railroad have completed the missing link in their road, making now its connection with Milwaukee on its own independent line. In an interview with Mr. James Barker, General Passenger Agent of the road, we learn that the present mileage is 486 miles, of which 65 miles were constructed the present year. It has under construction the Rib Lake Line, which extends from Chelsea to the east, of which some eight or ten miles is under contract. It is proposed to carry this line clear across the state. It has also in view a line into the Penokee Iron Range. Recent developments have shown that there are some valuable mines in this vicinity at present inaccessible, and a line into this territory will be built within a very few months. The line has been surveyed and located, and the contract for grading etc., will probably be let very soon. The present terminal stations are Milwaukee, Portage, Eau Claire and Ashland. From Milwaukee to Stevens Point and from Portage to Stevens Point is a farming country upon which the usual Wisconsin crops are raised. Crops have been very fine for a number of years past. The balance of the line is timber, the value of which has constantly increased. Although millions of feet of lumber have been cut on this line within the past six years, the supply is apparently inexhaustible and it hardly looks as if a tree had been taken out of the vast forests. As fast as the timber is cut off the land is placed under cultivation, and in contradistinction to the soil of timbered countries in general, that of northern Wisconsin proves to be excellent in quality and capable of producing immense crops. There have been no changes in the management of the road for a number of years. The present officers are C. L. Colby, president of the company and agent of the trustees who are in possession of and operating the road; F. H. Finney, general manager; James Barker, auditor and general passenger agent; and T. H. Malone, general freight agent. The traffic as compared with the previous year shows a very great increase, viz: The earnings for 1881 were $997,609.58, while those for 1882 were, estimating the last two weeks in December, will be $1,330,696.02. There is no doubt but what the completion of the Northern Pacific from Superior City to Ashland will at once bring the Wisconsin Central into publicity, and it is deemed an assured fact that this line will be built. The consolidation of the Omaha and North-Western, will not affect the Central's connection arrangements.

The Wisconsin Central's equipment includes 50 locomotives, 1,562 freight cars, 28 passenger cars and 5 sleepers. It has 70 station agents and about 800 employes. The monthly pay-roll amounts to between $50,000 and $60,000. Every one of the general officers resides in Milwaukee, and no foreign president is supported. The car shops of the road, at Stevens Point, the finest in the State next to the St. Paul's, are fitted out with every convenience, including electric lights. On the 1st of January three fast trains will be put on the new route. Verily it is a Milwaukee institution of which Milwaukeeans are proud.

STEAM ENGINE CRANK PINS.

Says the *Canadian Manufacturer:* One of the great difficulties connected with the steam engine crank pin arises from the crank being necessarily rigidly keyed to the crank-shaft. The crank-shaft journals will wear, or the foundations upon which they rest may settle down and throw the shaft a little out of true line. The amount may be very small so far as the shaft itself is concerned, but the crank pin being at the end of a lever is affected to a degree proportionate to the length of that lever. Hence, engines are often seen running with the bushes of the crank pin so loose as to cause quite a knock or thump, each time a "dead centre" is passed, and yet any attempt at tightening is followed at once by heating.

It often happens that in addition to this knocking caused by looseness of the bushes, there is another motion sideways, and the bushes which originally were a neat fit between the collars of the crank pin, now jump from side to side as the crank revolves. This is almost certain to be the result of the crank-shaft being off the square with the centre line of motion of the engine, although sometimes it is caused by the shaft having become bent, and so producing the same results as if one end of the shaft had moved out of place.

If the crank pin is not large enough to resist the strains brought upon it, without forcing out the oil, it will never work satisfactorily, although some lubricants give good results under pressures which caused heating with other kinds in use.

The engineer who is troubled with crank pin heating should first find out by examination if the heating is accompanied with abrasion or cutting of the rubbing surfaces—as it may be some grit or dirt having got in along with the oil is the cause of all the trouble. If cut the bearings should be carefully filed and scraped true again and peefectly cleaned; at the same time cleaning out all the oil ducts and cup, and make sure that a regular supply of oil can be maintained.

If the bearing is not cut, or if heating continues after making the surfaces all right, the engineer should try the level and square of the shaft, but before doing so, if the connecting rod has a strap connection, it would be well to take off the strap and one-half of the brass bush, and try how the bush fits between the crank pin and the butt end of the connecting rod, with the crank first in the one dead centre and then in the other. This may reveal the source of the trouble and save some time and labor.

The crank pin, in order to work properly, must be perfectly cylindrical. It turns round in the bushes of the connecting rod once every revolution of the engine; it must also be fair to the surface of those bushes in every position it assumes during the revolution of the crank. Having secured this, and good surfaces both on the pin itself and on the bushes, the bushes should be made to touch each other without being too tight on the pin, and then the collar tightened up and held in place by a screw.

In engines made many years ago it was not uncommon to have the working surface of the crank pin made to form part of a sphere, so that if the shaft did get out of line, or the connecting rod itself work off the teeth, it could not bind the pin.

The engineer who wishes to be saved from trouble and vexation should be specially watchful of the crank pin of his engine, and never have it running with slack bushes or dirty oil cup, or in any condition likely to produce heating or cutting.

THE GOVERNMENT AND THE TELEGRAPH.

The New York Board of Trade and Transportation has taken the serious step of adopting resolutions recommending the appropriation by the Government of all telegraph and telephone lines as a part of the postal system, following the example of all, or nearly all European countries; and similar action has already been taken by the National Board of Trade at its last two annual meetings.

The public is evidently in favor of the movement, and the sooner it is put into execution the better. The only wonder is that in a go-ahead, enterprising country like this, we have so long been willing to put up with the whims of telegraph monopolies, and pay high rates for incomplete and often inadequate service. When every post-office is a telegraph office, and rates are put down to a minimum rate, as in the case of postage, business facilities will receive an impetus now little dreamed of.

FLOUR ADULTERATION BY FLOUR DEALERS.

THE *St. Louis Miller* in a recent article in this subject says: It is a destructive offense against puplic health, and it is so near to being identified with the milling business that millers have a selfish as well as a humane interest in protecting their fellow-men against the malignant evil. The dealer who is mean enough to adulterate his flour with stone-dust, or other cheap and deleterious substances, would be nefarious enough to unhesitatingly steal the brand of an honest miller and put the false stuff upon the market under a well-known and reputable name. Adulteration increases the apparent supply of and diminishes the actual demand for flour. It puts in the market a certain amount of material which is sold and consumed as flour. Millers sell fully that much less of the genuine article. The adulteration can not but prove more or less unsatisfactory, therefore the consumer naturally is likely to somewhat dispense with flour and turn to some other food staple. Hence it cuts into the miller's sales through both demand and supply. Whether or not flour adulteration be limited or extensive, if tolerated or treated with indifference it will grow rapidly and at last become hard to suppress. It is something which calls for no trifling measures. It should be dealt with sternly and effectively. Let miller's associations offer rewards for the detection of adulterators, and instruct their law committees to have them uncompromisingly prosecuted. Thus a business basis, without any sentimentality about it, will be reached at the very first step. Millers thereby at once thoroughly remove chance stigma from themselves and start the machinery to crush out the scandalous abomination—which we suspect is quite closely confined to obscure retail dealers in flour. So far as that is concerned, however, we think that the more prominent and extensive a dealer the adulterator may be, the more urgently, and even vindictively, he should be prosecuted.

[Written for THE UNITED STATES MILLER.]

MILLERS, FARMERS, STEEL RAILS AND THE TARIFF.

BY JOHN W. HINTON, OF MILWAUKEE.

The Iron and Steel Question of the country is now the most prominent before the people, while the probable shutting down of the large rail mills, thereby throwing out of employment many thousands of wage earners, makes the subject one of vast importance.

As farmers and millers are deeply interested in all that appertains to so important an industry as the making of steel rails, and as the "UNITED STATES MILLER" aims to give the truth and impart only correct information for the benefit of its readers, I will give them some facts not so generally known as they ought to be.

It may startle some of your readers to inform them that it cost nearly three millions of dollars to make the first steel rail that was made in this country. The following speech of Mr. John I. Blair of Blairstown, New Jersey, was made at the National Tariff Convention, Chicago, Nov. 16, 1881.

M. J. B. Grinnell of Iowa, had playfully alluded to Mr. Blair, stating that "he supported about 1,000 miles of railway in Iowa; he is one of the poor manufacturers. I should like to hear from him. I do not know of anybody from whom I should be more delighted to hear. I refer to John I. Blair of Blairstown, New Jersey."

Mr. Blair: "Mr. President, I have always had a high opinion of this gentleman's judgment, but when he calls on me to make a speech I feel a little like the old lady who said she always put her trust in Providence, but one day going down a hill the breeching broke, and she said she had great doubts. [Laughter.] Then there is another thing, I am in the position of the New England Yankee, who said he lost his wife right in the height of making cheese, and he never in the world had a little foolish thing trouble him as that did. [Laughter.] That is just my case in making a speech. It gives me trouble; I never learned the trade.

I am here, sir, to represent the Lackawanna Iron and Steel Company, of Scranton, Pennsylvania, who are now manufacturing about a hundred thousand tons of steel rails a year. Before, we were in the habit of manufacturing iron rails for this western world, when it was ruleable to give credit, and in consequence of it, we had to take a good many railroads in pay for iron.

There has been a great deal said about the making of steel rails being a monopoly. I think I can explain to those who make such allegations that that is not so. Before the bill was passed in Congress for the protection of making steel rails in this country, it was estimated that the difference in the wages in making steel rails in this country and in Europe was $20 a ton. The consequence was that those interested in manufacturing before they undertook to make steel rails from the Bessemer process, went to Congress and got a duty laid. What was the result after this was done? Mr. Bessemer asked a million dollars for the privilege of permitting us to make steel rails in this country. He was obtaining for steel rails here one hundred and forty dollars a ton, gold, and from that to one hundred and twenty, and it was said they could not be made for anything less. What was the result? We drummed up eleven companies and we bought that patent or the privilege of making rails in this country for $825,000. Well, we started; a portion of these companies, in putting their works in operation, paid a large sum of money, and some broke once and some broke twice. Many of us went through; and what has been the result? After we had undertaken it we had not steel ores in this country that would answer the purpose. We had not the workmen in this country, and it was a number of years before we made any success. It was all loss. And what is the result now? Last year the various companies made a million tons of steel rails, for which the price has not been over sixty millions of dollars. Sixty millions of dollars would have been the cost if we had imported from Europe; and I ask in the name of heaven, where this money was to come from? That is the situation. This patent soon runs out. There were eleven mills; they were all equal stockholders, and it was agreed that if one mill made more iron than the other they should pay to a fund, and each of the stockholders should draw out of that, so that the mill that made but few rails got the same advantage as the others, and some in fact made more money by just doing nothing than if they had been working at full blast. That is the explanation about steel rails. Just give us labor in this country as cheap as it is in Europe, and we will ask you for no duty whatever. It is the laboring man that gets it. Look at the laboring man of the manufactories here and look at those that come from Europe with their wooden shoes and their peculiar clothes. You see how they are dressed and how they are clad. A government that will not protect its own people, not only in life and liberty, but in their prosperity, and give them the preference of their own markets and their own country, is of but little value to the great mass of the people. [Applause.]

Gentlemen, what have the railroads done for this country? It is the railroads of this country and the steam on the ocean that have made the country prosperous as it is to-day. That is it. I will relate a story that was told some years ago that was told about a gentleman from away down below Cairo, who was shipping hogs to this market. He fell out with the railroad companies, and said he would never ship another hog—he would drive his hogs all the way to Chicago; and he tried it, and he was six weeks on the road, and he lost a great deal of money; and when he got through the railroad company said to him: 'You didn't make much by this operation?' 'O, no,' said he, 'but I had the pleasure of the company of my hogs for six weeks.'

Now, gentlemen, here are these railroads all in operation, and any gentleman who wants to drive his hogs to market can do it. He need not send them on the railroad, he can drive them through this mud and see how he will come out.

Now, what has this tariff done for the wool interest. We are using all the wool of this country now, and we are manufacturing it ourselves. We are making American cloth that is good enough for any gentleman to wear. I wear it altogether." [Applause.]

Mr. Grinnell. "That is a matter of necessity."

Mr. Blair. "Yes, that is my necessity. [Great laughter.] I see the farmers are well represented here, and I may leave that subject.

Let me tell you again that the Lackawana Iron and Steel Company and others at Scranton are paying out a million dollars a month for labor. In 1848 there were five houses there. There are fifty thousand people there to-day, and they are sending off about thirteen millions tons of coal. That much I know from my own knowledge, and they are eating up all the produce that is raised in that section of Pennsylvania, and they have got to come here for many millions of bushels besides. And so in other places. I know in New Jersey we don't raise enough to support our own people, and in New England the same, and here is the place were the surplus comes from; and on the other hand here is our market. We send supplies to these Western States, and when we are through we will send the surplus to Europe.

I regret, gentlemen, very much, that I am unable to make such a speech as the day and the occasion require. I have not the education. In the days of my boyhood, some three score years ago, it was a very difficult thing to obtain an education. I went some to day-school and I went some to night-school, but the elements were against me at night-school—it was dark and cloudy and the lamp-light was dim; but I used to like to do sums in addition, and I have made some additions since." [Applause.]

In 1881 more than 1,300,000 tons of steel rails were made in the United States; calling them $60 a ton, there was a value of $78,000,000. Taking off the duty, $28 a ton, for the sake of argument merely, and there was a value of $41,600,000. But it does not follow that the consumer of a taxed article has to pay that import tax. It is well known to those who are posted, that when the proposition was made, early in 1880, to reduce the tax on steel rails from $28 to $10 a ton, the price of steel rails was raised in England nearly $18 per ton. But if the railroads have to pay the tariff tax, why are the English railmakers so anxious to have it taken off?

Another feature worth noticing is the immense developing of our iron and steel industries. As before stated, in 1881 we made 1,300,000 tons of steel rails—fully 60,000 tons more than was made in England in the same time. Hon. John Welsh, in a late number of the *North American Review*, "England and our Tariff," says:

"One hundred and ten thousand miles of railroad have been constructed (in this country,) in an incredibly short time, at a cost of six thousand millions of dollars. Twenty-seven States are now competing with Pennsylvania in the manufacture of iron. In 1881, the product of pig iron was 4,641,564 tons, the yield of seven hundred and sixteen furnaces, one-third of which were out of blast, scattered through twenty-eight States. The first steel rails were made in England in 1855, and in this country in 1867. In March 1868, their current price was $174 per ton. The price has fallen annually in proportion to the increase of our manufactures, until now steel rails are sold at $45, and have been sold as low as $42 per ton. In the mean time our production has reached 1,180,000 tons for 1881, being greater than that of England by sixty thousand tons. Before the 1st of August 1882, Colorado, from her own mines, with her own furnaces, converters, and rolling mills, has produced and laid ten miles of steel rails."

There is at least $60,000,000 invested in the manufacture of steel rails in this country. This year, 1882, the probable output of steel rails in the United States will be 1,800,000 tons, equal at $45 a ton, to a value of $75,600,000, whereas, up to 1870 less than 18,000 tons of steel rails had been made in the United States.

The following table will show the reader how the encouragement of the manufacture of steel rails in this country through the tariff has brought down the price:

Year.	Product in Gross Tons.	Prices in Currency.
1867.....	2,277	$166.00
1868.....	6,451	158.50
1869.....	8,616	132.25
1870.....	30,357	106.75
1871.....	34,152	102.50
1872.....	83,991	112 00
1873.....	115,192	120.50
1874.....	129,414	94.25
1875.....	259,699	68.75
1876.....	368,269	59.25
1877.....	385,865	45.50
1878.....	491,127	42 25
1879.....	606,397	48.33

The marked decline in prices, upwards of 250 per cent., in the thirteen years noted, will show to any candid mind, what is always claimed by Protectionists, that a protective tariff, while it lowers prices, keeps up the price of labor. Mr. Blair says, with "labor in this country as cheap as it is in Europe, and we will ask you for no duty whatever."

On the subject of cheap labor in the making of steel rails, Hon. Emery A. Storrs, before the Ways and Means Committee, at Washington, Feb. 3, 1880, spoke as follows:

"But I do not understand that it is the policy of legislation in this country, to encourage enforced and ground-down reductions of labor. I do not think that the laborers of this country have at any time been too well paid; but if the experiment is to be tried * * * * we must consider what we are to pay for it * * * * the lowest possible wages, those which would correspond to the character of the wages paid to the English laborer, which must have the same result upon the laborer.

"Now, of course, this branch of it is talked thread-bare. Everybody has urged it; but the manufacture of steel rails is not the only problem, and, without discussing general topics, I do not believe this country is the most prosperous when its laborers are most inadequately paid. I do not believe in the doctrine taught by that modern school of philosophy, that high wages, prosperity, busy mills, crowded railways, are unreal and unsubstantial and unsound. I do not believe that there is nothing sound but pauperism. I do not believe that the man is prosperous only when he is impecunious.

"If the sole end to be achieved is cheap transportation, and that is certainly to be accomplished by cheapening in the construction and profits of railroads, it is illogical to confine our efforts to the simple question of steel; the reduction should be universal. We should reduce the wages of railroad employees, and thereby correspondingly reduce transportation. We should reduce the salaries of railroad officials, and thereby reduce transportation. We should reduce by legislation the payments of dividends, and thereby reduce transportation. If Mr. Vanderbilt of the New York Central, and the Chicago, Burlington and Quincy, would be content to scale down their dividends so as to match those realized by the manufacturers of steel rails west of the Alleghanies since 1873, we could insure a great reduction in the future rates of transportation; and as their sole object is the benefit that the purchaser has to avail himself of methods of transportation from the West to the seaboard, and as they have no motives of individual gain involved we suggest that as the means by which the Western farmer may be greatly relieved.

But the railroad employee, whose wages have been thus reduced in order to bring about cheap transportation, will immediately clamor for a reduction of the wages of farm hands, so that there may be cheap bread. The farm hand will immediately clamor for lower prices for the tailor, the shoemaker and the hatter, in order that he may have cheap hats, shoes and clothes. Finally, there will be a general elysium of a general divide; everything will be cheap, and there will be a millenium of genuine, solid, uniform, prosperous pauperism.

"This country never has been prosperous, and never will be prosperous, when the laborer is inadequately rewarded. Capital aggregated in bulk may be swollen to undue proportions; but the bone and sinew of the country, the laboring element in it, is discouraged, demoralized, destroyed. In Great Britain, to whose bright and shining example we are constantly pointed, a steady reduction of the dignity of the laborer by the steady reduction of his reward has brought the laborer intellectually down to the capacity of the mule, receiving hardly the attention which the mule receives, for there are humane societies organized for the prevention of cruelty to animals, which protect the mule, but there are none which protect the benighted laborer, reduced to a condition of barbarism by pauper wages, made necessary by the production of cheap steel."

But one more remark, and I will close. Mr. David H. Mason, of Chicago, one of the ablest writers on Tariff in this country, in an address to the same committee, said:

"It is claimed that the duty on steel rails is an obstacle to cheap transportation; that the duty enters into the cost of railroad construction, and that the transportation companies are obliged to reimburse themselves for this extra cost, by taking it out of the farmers in the shape of higher freight-charges on wheat and corn, on hogs and cattle, on seeds and fruits.

The enormous fallacy of this position was very forcibly exposed by Gov. Carpenter, of Iowa, in his inaugural address, delivered January 27, 1874, thus:

"Nor is it the tariff that burdens the farmer. An ingenious writer has shown, by estimating with great care and by unmistakable mathematical value and exactness, that if you take the New York Central Railroad, and assume that it extends from Chicago to New York, double track the whole distance, laid with iron weighing 65 lbs. to the yard, and then assume that this iron only represents half of the road's consumption of iron, and further assume that the original cost of all this iron was increased by the entire tariff which would have been collected, if each ton had been imported; when he has granted all this, and assumed all this, he demonstrates by actual computation, taking the cost of transport of one thousand and twenty-one millions tons of freight, the amount this road carried one mile last year, that the exact additional charge on a bushel of wheat from Chicago to New York, would be one cent and one-hundred-and-eighty-eight-thousandths of a cent, on account of the tariff. The tariff will never ruin the Western farmer."

But for protracting this article to too great a length, I might conclusively show that, of all classes in the country, not one has been so much benefited by the protective tariff, particularly on steel rails and iron, as has the farmer, principally in the increase of the home market to 47,000,000 of consumers of food to 7,000,000 of producers, while the transportation of the agricultural productions to the Eastern markets and seaboard has been brought down to a lower charge than that of any other country, in some instances to 200 per cent., while during last year, less than 8 per cent. of the entire farm products of the country were exported, the home market consuming 92 per cent. of them.

As shown by the following quotation from the *English Fortnightly Review:*

"Sir Henry Bessemer helped the Americans to steel rails; the use of the latter cheapened railroad freights in America to such an extent that our competitor, the western farmer, can put his wheat and produce upon our markets for less than we can."

It is a fact, as stated by Governor Carpenter:

"THE TARIFF WILL NEVER RUIN THE WESTERN FARMER."

JOHN W. HINTON.

Milwaukee, Dec. 27, 1882.

[Written expressly for the UNITED STATES MILLER.]

HORSE POWER NOTES.

For a mean effective pressure of 55 lbs. per square inch, and with a piston speed of 600 feet per minute, the gross horse power is the same as the piston area in square inches.

Thus: a 6 inch cylinder will, with 55 m. e. p. and 600 ft. piston speed, give 28. 29 gross horse power.

A 40 lbs. and 400 ft. piston speed, the gross horse power is very nearly half the piston area.

Dividing 55 by .7854, we get 70.02; hence we may say that at 70 lbs m, e. p. and 600 feet piston speed, the gross horse power is equal to the square of the piston diameter; and that at 17½ lbs. and 600 feet, it is the square of the radius.

At 700 feet piston speed, and 50 lbs. "mean effective," the gross horse power about equals the area of the piston in square inches.

At 1,200 feet, and with 27½ lbs. mean effective, the gross horse power equals the number of square inches of piston.

As the net horse power, after deducting for friction, area of the piston rod, &c., is generally roughly estimated at from 12½ to 16⅔ per cent., ⅛ to ⅙ less than the gross horse power, or roughly from ⅞ to 5-6 thereof; assuming that it is ⅞ we should require more than the pressures and speeds quoted above; that is we should need 8-7 the pressure or the speed.

This would give 8-7 x 55=about 64 lbs. m. e. p., iustead of 55; and in the same way we get the following (allowing ⅛ for friction &c.:

With 64 lbs. m. e. p. at 900 feet piston speed.
" 32 " " " 1,200 " " "
" 50 " " " 700 " " "
" 100 " " " 350 " " "

the *net* horse power may be said practically to equal to the piston area in square inches; and dividing the above power by .7854 we have (allowing ⅛ for friction):

With 81.5 lbs, m. e. p., at 600 feet piston speed.
" 40.7 " " " 1,200 " " "
" 53.8 " " " 700 " " "
" 75.8 " " " 500 " " "

the *net* horse power is equal to the square of the cylinder diameter in inches.

Taking advantage of the foregoing, we may construct tables showing how many pounds m. e. p. will give one gross or one net horse power for each square inch of piston area.

In this case

$$HP=A=\frac{PAT}{33,000}; \text{ hence}$$

PT=33,000; and if we can get the product of the mean effective pressure in pounds by the piston area in square inches to equal 33,000, we are all right.

The first couple we noted, 55 x 600 answered the conditions. Now below we give a table showing the piston speed requisite to give one gross horse power for each square inch of piston area, at any given mean effective pressure.

Lbs.	Feet.	Lbs.	Feet.	Lbs.	Feet.
27.5	1,200	50	660	72½	455.2
30	1,100	52.5	629	75	440
32.5	1,016	55	600	77½	426
35	943	57.5	572	80	413
37½	880	60	550	82½	400
40	825	62.5	528	85	388
42½	777	65	508	87½	377
45	733	67.5	489	90	367
47½	695	70	471	100	330

In a corresponding table, we give the number of pounds m. e. p. to give one gross horse power for each square inch of piston area.

TABLE EXPRESSING GROSS HORSE POWER IN PISTON AREA,

Feet.	Lbs.	Feet.	Lbs.	Feet.	Lbs.
300	110	600	55	900	36.7
350	94.3	650	50.8	950	34.7
400	82.5	700	47.1	1,000	33
450	73.3	750	44	1,805	31.4
500	66	800	41.25	1,100	30
550	60	850	38.8	1,150	28.7

By dividing the figures in the foregoing right hand column by .7854 we get some which will enable the gross horse power to be expressed by the square of the diameter instead of by the piston area.

TABLE OF PRESSURES AND SPEEDS AT WHICH THE GROSS HORSE POWER IS EXPRESSED BY THE SQUARE OF THE CYLINDER DIAMETER.

Lbs.	Feet.	Lbs.	Feet.	Lbs.	Feet.
40	1,050	55	764	72½	600
42	1.000	57½	730	75	579
42½	988	60	700	77½	560
45	933	62½	672	80	525
47½	884	65	649	84	500
50	840	67½	620		
52½	800	70	600		

Feet.	Lbs.	Feet.	Lbs	Feet.	Lbs.
400	105	700	60	1,000	42
450	93.3	750	56	1,050	40
500	84	800	52.5	1.100	38.2
550	76.4	850	49.4	1,150	36.5
600	70	900	46.7	1,200	35
650	64.6	950	04.2		

Thus at 400 feet piston speed and 105 lbs. mean effective pressure, or at 600 feet and with 70 lbs. m. e. p., or with any of the combinations in the last table, an engine with 15 inch bore will give 225 horse power, one of 20 inch bore 400 horse, &c.

THE LARGEST COMPLETE ROLLER MILL IN EUROPE.

In a recent number of *Die Muehle* Mr. J. J. Van den Wyngaert gives the following descriptive account of a visit to the steam flour mills at Malmö (Sweden,) which were started a few months ago, on Nagel & Kaemp's system, and which is the largest complete roller mill in Europe. The mill is worked by the Joint Stock Copenhagen Steam Mill Company, the manager being Mr. Rud. Schmidt, and one of the main objects of the promotors was to acquire the export trade to England, Holland and other countries, which had in a measure been lost to German millers by the introduction of the new customs regulations. Mr. Van den Wyngaert says: The establishment stands on the so-called West-Basin of the Malmö harbor which is adopted to the admission of vessels of the greatest draught. Two lines of rails, one of which is public and one belonging to the owners of the mills, pass between the quay and the mills, and above both lines, at a considerable height, is an elevator which is constructed with a view to discharging the cargoes of both the largest and smallest vessels. The premises are occupied by the wheat store and cleaning rooms, the mill and flour warehouse, the front faces of which are towards the water. In the yard are placed the engine and boiler house, and at the side furthest from the water are the offices, stables, etc.

The mill is driven by a compound high and low pressure, surface condensing steam engine, built hy the well-known firm Burmeister & Wain of Copenhagen; the indicated horse-power is 500, whilst the effective is calculated at 350, which is transmitted by 14 hempen ropes from the fly-wheel to two main line shafts. One of these two line shafts is in the basement, whilst the other is situated in the second story. A more beautiful or smoother transmission of power cannot be imagined and it cannot be too strongly recommended for all cases where a sufficient space intervenes between the fly-wheel and line shaft, as the ropes run best when not too tightly drawn over the pulleys and consequently have a certain amount of sag. The ropes used in the mill have a diameter of about 0.052 metre (2 inches) and weigh 2kg (about 4½lb) per metre. The fly-wheel has a diameter of 6.27 metres (20ft 5in) and makes 55 revolutions per minute.

The normal capacity of the mill is 1,200 sacks of wheat to 100kg (220lb) or 800 sacks of rye in 24 hours, and I was informed by the manager that the consumption of the Newcastle coal amounted to 8,000 or 9,000 lb.

The cleaning machinery is capable of treating this quantity of wheat in from 12 to 14 hours, thus necessitating only a very limited amount of night work in this department. From the elevator the grain passes to two automatic weighing machines which indicate as every ton weight of grain leaves the machines to be transported by means of elevators, endless bands and tubes to silos and storage. Here the grain undergoes the operation of mixing through the agency of other elevators and endless bands. Before returning to the silos the grain passes through a "Richmond Grain Cleaner," by means of which the rough dirt and dust are removed. The grain on its way to be reduced is first sent over another "Richmond Grain Cleaner," and thence to a sorting cylinder which separates it into three portions according to size, and so over a threefold system of cleaning machinery consisting of cockle separators, Eureka brush machines and stone sieves into a large hopper in the mill which is capable of containing a sufficient supply for one night's work. The further cleaning of the grain is performed by chilled iron rollers which lightly crush it in order to release the dirt remaining in the crease of the grain.

The reducing process is performed first by fluted chilled iron rollers followed by centrifugal dressing machines. The broken wheat is then sent to smooth chilled iron rollers followed by a dismembrator, after which it is dressed and then again to smooth rollers and a dismembrator and dressing machines, the end discharge from which is the finished bran. The flour produced by the three operations just mentioned is conveyed by two conveyers to the flour bin, whilst the middlings are sized before going to the Prokopee purifiers. The purified middlings are reduced by smooth rollers and dismembrators, similar machines being used for "dunst" (dust flour) and tailings respectively. The flour produced by these processess enters the two conveyors already mentioned, to be conveyed to the flour bin, with the exception of that made by the tailings process which is kept separate from the straight run of flours.

Generally speaking there is, with the exception of the tailings flour referred to, only one grade of flour made, and when this is the case the flour from the two conveyors falls into one elevator and is thus transported to the flour bin chamber, from which it is packed into sacks by a mechanical appliance.

The mill contains six fluted roller mills, sixteen smooth roller mills, five double dismembrators and about twenty centrifugal dressing machines, all of which have been supplied by Messrs. Nagel & Kaemp; the plan of the mill is by Messrs. Jacks & Behrns.

It is particularly worthy of notice that in this mill both rye and wheat are reduced by the same machines, the only alteration necessary being in the speed of the dismembrators. This is a matter of great importance in the case of the Malmö Mill, as it is frequently required to grind wheat and rye upon alternate days.

In addition to the machinery already mentioned three pairs of millstones have been erected for the purpose of grinding rye for the manufacture of the well-known Swedish "Knäckebröd," the rye being ground so fine that the bran is absolutely reduced to powder; the porous surface of the millstone is admirably adapted to this work, whilst the rollers and dismembrators cannot reduce the bran sufficiently.

The ship-elevator, referred to at the commencement of this article, is by Messrs. Jaacks & Behrns who have patented the idea.

The elevator is arranged in such a manner that the grain may be raised from a vessel of any description, and without stopping the work the elevator may be raised or lowered at will.

The buckets of the elevator are of such a form that the grain can be carried by them in a horizontal direction as well as vertical, thereby facilitating the transport of grain to any desired point. I was informed that the capacity of the elevator was 50,000kg (50 tons) per hour.—*Corn Trade Journal & Millers' Gazette, (London.)*

THE USE OF COAL.

About the beginning of the thirteenth century much objection was raised against its introduction into London on the plea that its smoke was an intolerable nuisance. This opposition was continued for nearly 200 years in some quarters, but was at last obliged to give way before the growing scarcity of timber. Toward the beginning of the fourteenth century many shallow collieries were opened out in the neighborhood of Newcastle-on-Tyne, but little is known about the progress of our subject during the course of the fifteenth century. There is enough to show, however, that the demand for coal went on increasing. In a petition presented to the Council by the Company of Brewers in 1578, we find that corporation offering to use wood only in the neighborhood of Westminster Palace, as they understand that the Queen findeth "hersealfe greatley greved and anoyed with the taste and smoke of the sea coales." Another author writing in 1631 says that "within 30 years last the nice dames of London would not come into any house or room when sea coals were burned, nor willingly eat of the meat that was either sod or roasted with sea-coal fire." Soon after the commencement of the seventeenth century the use of coal for domestic purposes, as well as for washing, brewing, dyeing, etc., was general and complete. The mines were still shallow, and they where drained by means of horizontal tunnels called adits, water-gates. etc. Already attempts had been made to sink some of them under the water-level and to raise the water by machinery. In the year 1486—7 the monks of Finchdale Priory expended a sum of money at one of their collieries on the Wear "on the new ordinance of the pump" and on the purchase of horses to work it. Underground fires and noxious gases began also to appear about this time. The miners' tools consisted of a pick, a hammer, a wedge, and a wooden shovel. The coal was raised to the surface in some cases by means of a windlass; in others, as in the mines in the east of Scotland, it was carried up stairs on the backs of women called coal-bearers. In the year of 1615 the fleet of vessels called the coal fleet, which carried the produce of the northern collieries—one-half to London, the remainder to other destinations—numbered 400 sails. Many foreign vessels also, especially French, carried away cargoes of coal to their respective countries. Twenty years later the coal fleet had increased to 600 or 700 sails, and was already regarded as "a great nursery of seamen."—*Nature.*

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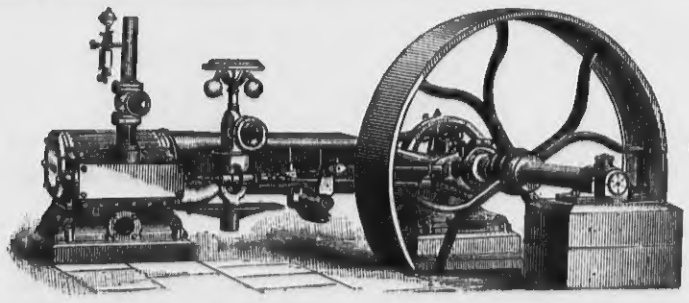

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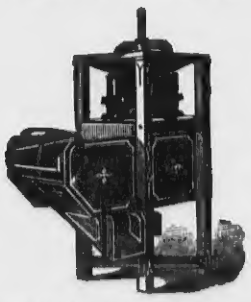

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STEAM ENGINE ECONOMY.

The question of steam-engine economy, which is being agitated in the columns of some of our cotemporaries by writers who discuss it in a general way, is little benefited by such general discussions. When terms like "less first cost," "less skill," "less cost of repairs," "extra boiler capacity required," "small powers" and "considerable powers" are used without direct qualification, definition or exemplification, they convey but little meaning. An engineer accustomed to build or use engines of 500-horse power or above, might consider "small powers" any way from one-horse power to 100 or 200-horse power, while to another the term "small powers" would convey the idea of engines from one to ten-horse power, and a 100 or 200-horse power engine would rank under the classification of "considerable power." Similarly the term "less," as applied to "cost," "skill" and "repairs," may vary in the reader's or writer's mind within the limits of zero and infinity. When ideas or suggestions are based on such general terms as above, they are useless to any one, and the reader after having perused such articles, knows no more than he did before perusal; nor does he find anything which he can apply in practice.

When discussing the question of steam-engine economy, one must come down to figures; and if this cannot be done, little of real use can be achieved. The "less" must be qualified in dollars and cents, the ranges of horse power must be stated, and then there is at hand the data for comparison and discussion. Often the lack of experimental determinations prevents one from coming down to exact figures; but the need, then, is not discussions and general assertions, but *experimental determinations*. The very class of discussions which we would assail, serves to retard the institution of necessary experimental trials; for the air of wisdom and erudition and boldness assumed serve to mystify a large class who would otherwise urge and help to raise opportunity and funds for experimental work.

The question of steam engine economy is fortunately one that, as a rule, can be settled with sufficient accuracy in any particular case; but each case must be considered as a special problem, to which the laws of engineering, of cost of production and attendance, and occasionally experimental trials must be applied; just as in the maintenance and design of a bridge. There are many who oppose algebraic methods of presentation, and some the use of higher mathematics, who indulge in the evil writing to which we refer. While we at all times favor the simplest mode of representation of a position, be it graphical or mathematical, there is a word to be said in favor of analytical methods, and that is that the writer has to come down to figures and close analysis. "Generalities" recede to the vanishing point.

The abuse to which analytical methods and formulæ are subject is the wholesale and indiscriminate introduction of "constants," but any improper use of constants can be detected by any one comprehending the mathematical demonstrations. The ablest and most satisfactory analysis of questions of steam-engine economy are those that give definite replies to inquiries in dollars and cents. Steam-engine economy is but one phase of the great general problem of all engineering, to obtain a given result for the least current expense in money. Such current expense includes, of course, interest, repairs and depreciation of plant, cost of attendance and other current costs of production.—*American Engineer.*

IVORY WHEAT AND MILLO MAIZE.

J. T. Henderson, Commissioner of Agriculture of the State of Georgia, in a report for 1881 and 1882 calls attention to the claims of "Ivory wheat" and "Millo maize" to a place on the list of profitable food crops. These are both members of the large family of sorghums, of the class that have for many years been cultivated in Central Africa and other tropical countries for bread purposes. Analyses made to gain the relative theoretical value of these grains as compared with ordinary standard wheat show that there is scarcely more difference in the proximate analyses of "Ivory wheat," so-called, and Dallas or Red May than appeared between the analyses of the latter two varieties of ordinary wheat. The Ivory wheat shows a larger percentage of albuminoids (flesh formers,) slightly less of starch and more of fats (fat and heat producers) than either of the true wheats. The Millo maize has considerably less of the albuminoids or flesh-forming substances than either of the others, being about equal to the Indian corn in this respect.

"The flour made from the Ivory wheat, when properly ground and bolted, is rather darker than ordinary 'family' flour, but possesses the property of kneading well and is therefore adapted to the process of "raising" with yeast or by similar means. Bread made from it, though not equal in any sensible respect to that from fine wheaten flour, is by no means unpalatable, and as indicated by analysis is probably fully equal in nutritiveness to any. For making the forms of bread for which buckwheat flour, rice flour, middlings of wheat, &c., are usually employed, viz.: waffles, griddle-cakes, muffins, &c., the Ivory flour seems to be well adapted." Mr. Henderson does not speak from actual experiment of the bread qualities of the Millo maize, but is of the opinion that in this respect it will be found to resemble Indian corn meal. It is claimed that both of these plants are enormously productive, rather indifferent as to soil and culture, and almost independent of the seasons after the soil has been prepared and the crop started off. Owing to the extraordinary seasons of this year it has not been practicable to test their capacity to resist drought, and a sufficient number of reports of experimenters has not yet been received to form any decided conclusions in reference to productiveness under ordinary circumstances. But Mr. Henderson is of the opinion that the reports will show that both are very productive—far more so than any grain crop now grown in this State. The Millo Maize is quite late in maturing, requiring favorable culture and the full season from planting time (April) until frost to mature in north Georgia; but this difficulty will probably soon yield to the acclimatizing effect of planting home-grown seed a few years. This plant appears to be unusually productive of foliage, will bear two or more cuttings, and promises to be very valuable for soiling and general forage purposes.

THE BOILER BLOW-OFF.

One of the most important parts of a steam boiler is the blow-off. It is also one that is subject to more abuse in its construction, location and use than almost any other fixture pertaining to the boiler. The most peculiar ideas seem to prevail in regard to its construction and position on the boiler. Some put it at the front end, some at the back end, and some put it in the middle of the shell. The great majority, also, instead of putting it on the bottom of the shell, where it belongs, insert it through the heads of the boiler, anywhere from two to six inches above the bottom of the shell, thus rendering it impossible to entirely empty the boiler when desired, and greatly impairing its efficiency for any purpose.

The only place for a blow-off pipe to enter a horizontal externally-fired boiler, is through the bottom of the shell within a foot or so of the back head. The boiler should be set slightly lower at the back end than at the front, say three-fourths of an inch for a boiler fifteen feet long. Then it may be entirely emptied by simply opening the blow-off valve, and all syphoning of water through hand holes is obviated.

This, however, is not the most important reason for locating the blow-off at the back end of the boiler. In a horizontal externally-fired boiler the application of the heat and the resulting circulation of the water, is such that the sediment is always deposited at the back end to a much greater extent than in any other part of the boiler. Obviously, then, this is the place for the blow-off. It is true that most boiler-makers now place it there, but there are many who still persist in placing it at the front end.

The proper method of constructing and attaching the blow-off pipe to the ordinary horizontal boiler is as follows: First, the pipe should be two inches in diameter. A circular piece of boiler plate about eight inches in diameter should be riveted on the bottom of the shell, with its center not over twelve inches from the back head. The hole for the pipe had better not be made until after this piece is riveted on, and then it should be drilled. If, however, facilities are not available for doing the job in this way, it may be drilled before it is put on. The hole should then be tapped, when it is ready for the pipe. The rivet holes on the inside of the shell should always be counter-sunk, and the heads of the rivets driven flush with the inner surface of the plate. If this is done there is no projecting rivet heads to assist in the collection of sediment at this point. A blow-off attached in this manner and provided with a straight-away valve outside the setting will always give perfect satisfaction if properly cared for. In many cases, however, where the water is bad, they are not opened often enough, and the inevitable consequence is that they soon become filled up with scale and sediment. When this occurs it may always be regarded as the best possible proof that it is located in just the right place, and, if properly attended to, will prove most effective in keeping the boiler free from scale and sediment.—*From The Locomotive.*

HOW GOOD BREAD CAN BE MADE.

A correspondent of *The Miller*, (London), says: Place 10 lbs. of good flour in a clean earthenware bowl, make a "pit" in the centre, leaving a portion of flour lying at the bottom. Sprinkle on the flour round the edge of the bowl about 1½ to 2 ounces of finely crushed salt. Have ready 2 ounces of fresh German barm* mixed to a smooth paste in a basin with half-a-pint of lukewarm water, adding a good teaspoonful of brown sugar thereto. Into the "pit" formed in the flour, pour gently a quart of lukewarm water, stirring in a little of the flour from the sides, (not from the bottom), then pour in the basinful of yeast and taking a little more flour from the sides, add about one pint more lukewarm water, stir till nicely smooth but not stiff, and covering the bowl with a clean cloth, allow it to stand in a moderately warm place for half an hour (if you want sour bread you can let it stand longer). If the yeast is good, and you have not mixed in too much of the salt, it will have risen in half an hour's time, when you gradually mix in flour from the sides of the bowl, adding more lukewarm water if desired, and kneading the whole well with clean hands for twenty minutes or half an hour, and so that it is not too stiff, but not to stick to the hands. Place it with the cloth cover in a moderately warm nook for 1½ hours (quite long enough), then cut off your lumps of dough to form a loaf. Knead it separately and well on a board, place it in the tins, slightly rubbed with a little lard to prevent sticking, and let it stand to rise in the tins in the same warm nook for a quarter of an hour. Then bake in the top part of a Yorkshire oven with moderately brisk fire, occasionally turning the loaf tins round, keeping the oven closed as much as possible, and avoiding cold draughts to the oven. When baked enough place the baked loaf on its end on a table, resting it on one of its corners, so that the air can play freely and as equally as possible round the whole loaf; if laid flat, fresh from the oven, it may be heavy. There only remains to add, if good bread is not the result, these directions being carefully observed, there is something amiss with the flour or yeast, but not with the baking.

*Ale or Yeast.

BOILER TREATMENT AND ENGINE MANAGEMENT.

There being so many engines in use where first-class engineers cannot be employed, it may be of service to such persons to give a few simple rules to be observed in the management of boilers and engines. As new boilers have more or less oil in them, it is best to blow out the first filling at the end of a day's run. This need only be done where there is a tendency to foam. A small amount of oil will prevent incrustation.

The supply of feed water should be regular In no case should the feed pump be required to lift water more than five or ten feet, and where the water is fed hot it should come from a tank situated above the pump. If from the high temperature of the water the pump refuses to work, a remedy may be found in allowing a slight leakage around the plunger, thus allowing the accumulation of vapor to escape. A very small air-cock may serve the same purpose.

Never fire when the water is below the lowest gauge. The safety valve should receive daily attention, and if not raised by the steam should be raised by hand. Frequent firing is most economical. Sudden cooling is injurious to a boiler. Portable boilers, in particular should not be blown off entirely when steam is above ten pounds; the doors should be kept shut while cooling. The efficiency and durability of a boiler are greatly increased by keeping it clean. Where water contains sediment, cleaning should be frequent. New engines that have been exposed in shipping should be thoroughly cleaned before starting, and oil of *a good quality* freely used during the first few days' run.

A priming tendency will sometimes be obviated by opening the throttle valve slowly. Cylinder cocks should always be open on starting the engine. All leaky joints should be stopped at once, and loose boxes taken up as soon as discovered. The governor belt should be kept tight to insure sensitive action of the governor. To lubricate the cylinder and valve, either cylinder oil or tallow should be used. Lard oil is not good for this. Belts, when new, frequently slip or require to be unusually tight. An application of equal parts of neat's-foot oil and tallow will be found very good on leather belts, and on rubber, either linseed or castor oil—the latter preferred; but a small amount at a time will be needed. Animal oil should never be applied to rubber belts.

By observing the above, and exercising good judgment, but little trouble may be apprehended in the management of an engine.—*Dynamicus in American Machinist.*

ITEMS OF INTEREST.

Smothering Smoke.—A great deal of fuss is made regarding the smoke nuisance, and various methods have been employed in the attempt to consume the black vapor. The Chicago papers have launched philippics upon the smoking and screeching tugs, while at the same time the smoke from their own chimneys rolled out in great smutty clouds and blew into adjacent windows. But is was more easy to howl at the tugs, which could howl back in disdain, than to begin the reformatory experiments at home. Recently, among other tests, a trial was made of a smoke purifier, which operated upon the smoke with cold water, and the result was very satisfactory. A simple remedy is already in vogue in England, which is also declared to be effective, though it has not been introduced in this country, unless in isolated instances. It is not a smoke consumer it is said, but a smoke stiller, and the principle of its working is the intermixture of smoke with steam and air. This is effected by means of a small pipe leading from the top and front of the boiler through a hole above the furnace door, so as to communicate with the fire. The furnace door is perforated, so as to admit a strong draught of air. It is found that after replenishing the fires, and while a cloud of thick, black smoke is pouring from the top of the stack, if the tap be turned so as to inject steam through the pipe in the furnace, the smoke will be at once subdued, and that too, without affecting the fires; the dense black cloud will disappear, and the stack will give no more show of what is going on below than a cottage chimney. The whole cost of the apparatus is less than $10.

The Strength of Beams.—Recent experiments show that spruce beams, loaded to one-half to two-thirds their breaking strain, finally break after a long and steady deflection, which continually increases until the final rupture occurs. If substantiated by further experiments, this fact will go far toward explaining the frequent falling of mill and warehouse floors, under loads supposed by the builders to be perfectly safe. The floors of all such buildings should be sufficiently strong to carry at least three times the weight that can, by any possibility, be put on them, and at least five times as strong as the ordinary load. Where there is running machinery in the building, which is likely to produce jar or tremble, these figures must be exceeded, as the effect of a continuous jar and strain combined is very destructive to the building in which they are found.

Solid Matter of The Wheat Kernel.—Does the solid matter of the wheat kernel increase after cutting, when the grain is cut before ripening? This is a question oftentimes discussed by farmers. Some hold that when wheat is cut while still green the growth of the kernel is completed after cutting, in the same manner as when the wheat is allowed to stand until fully ripe. In order to get information on this point in experiments conducted by Professor Jordan on the Pennsylvania State College grounds, samples of wheat were cut at various stages of growth, in each case the kernel of a portion of the sample being removed immediately upon cutting, and the kernels of the remaining portion being allowed to dry on the stalk in the usual manner. After the wheat had become as dry as it would get in a warm, dry room, two lots of 500 kernels each were counted from each sample and then weighed. In this manner any appreciable growth on the part of the wheat dried on the stalk would be detected. A table giving the various weights of the kernel at different stages, makes the increase in weight of the kernel after the wheat was cut to have been about 22 per cent, in the case of the partially developed kernels taken June 24. In all subsequent samples the kernels dried on the stalk seem to be no heavier than those removed before drying and immediately after cutting.

NEWS.

DEAD.—Geo. M. Hammon, of Tom's Brook, Va.

ANGUS Shaw, Turner, Oregon, has sold his mill.

BURNED.—J. B. Withers mill at Nayler, Ga. Insured.

ALEX Green, miller, Millersburg, Ill., have assigned.

J. C. HOPKINS, Irasburgh, Vt, has sold his mill to Wm. Morey.

SUSONG & Co., Bridgeport, Tenn., have sold their mill to Boyd & Co.

J. F. KIMRUELL'S mill burned recently. Loss $14,000. Insured $8,500.

F. E. LEMERT & Co., millers, Adam's Mills, O., have made an assignments.

HUBBARD & Jones of Olathe, Ks., are succeeded in business by Jones & Owens.

BURNED—James K. Hurin's mill, Cincinnati, O. The mill was partially insured.

CHARLES GROTH of Gilmore, Neb., has sold his mill to Messrs. Wilrodt & Bargdory.

DINSMORE & Blakimore, millers, Cornersville, Tenn., have dissolved partnership.

H. S. LEACH & Co., millers, Denver, Colo., have sold out to the Golden Gate Milling Co.

BURNED out—The Saginaw Barrel Co, Saginaw City, Mich. Loss reported at $175,000.

BURNED.—Jos. L. Guernsey's flour mill at Jeffersonville, Ill. Loss $20,000. No insurance.

BURNED out.—Samuel Rideont's flour mill at Calais, Me., Loss $5,000. Insurance $2,500.

JOHN Snow's mill, at Coral, Mich., has been destroyed by fire. Loss $4,000; insurance $2,500.

THE Case Mfg. Co., Columbus, O., have furnished Akers Bros. of Atlanta, Ga., with smooth rolls.

THE milling firm of Ballard, Isom & Co., Alberny, Oregon, is succeeded by Isom, Lanning & Co.

CAPPES and Schertz, Peoria, Ill., are putting in smooth rolls, furnished by the Case Mfg. Co., Columbus, O.

W. H. HUDSEN'S mill at Oakland Station, Ky., was recently destroyed by fire. Loss $1,000. No insurance.

MESSRS. Halliday Bros., of Cairo, Ill., have recently put in four pairs of Allis Rolls, in Gray's noiseless frames.

THE Case Mfg. Co., Columbus, O., have furnished S. Litzenberg, La Fayette, Ind. with some new machinery

THE Case Mfg. Co., Columbus, O., are furnising The Wichita Mill Co of Wichita, Kan., with some new machinery.

MILLER & Trayer, Buenavista O., have placed their order with the Case Mfg. Co., Columbus, O., for smooth rolls.

E. A ROSE, La Porte, Ind., is putting in some new machinery, furnished by the Case Mfg, Co., Columbus, Ohio.

THE U. S. Albumen Mfg. Co., Osterville, Mass., recently ordered a pair of porcelain Rolls, in Gray's noiseless frames.

THE Case Mfg. Co., Columbus, O., are furnishing Geo. Millbank, Chillecothe, Mo., with the Little Giant break machine.

Geo. W. Wicewanner, Piqua, O., is improving his mill and putting in rolls furnishing by The Case Mfg. Co. Columbus, O.

J. Q. Howe, at Phelps, N. Y., have ordered additional Steven's rolls of the sole and only manufacturers, The Jno. T. Noye Mfg. Co.

MR. W. Abbott, of Hillsboro, Ill., lately put in one pair of porcelain Rolls from Messrs. Edw. P. Allis & Co, of Milwaukee, Wis.

MR C. N. Wilson of Cannon Falls, Minn., lately put in one pair of Allis Rolls in Gray's noiseless frame, from Messrs. E. P. Allis & Co.

MR. E. McKim, of Deloit, Iowa, recently purchased a Roller outfit in Gray's noiseless frames, from Messrs. E. P. Allis & Co., of Milwaukee.

M. C. Goldthwaite has ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, two four-break Reduction machines for a mill at Marian, Wis.

MESSRS. E. P. Allis & Co., of Milwaukee, Wis., recently sold the Dayton National Home of Dayton, Ohio, an 18 x 42 Reynolds Corliss Engine.

MESSRS. E. P. Allis & Co., of Milwaukee, Wis., lately sold the Zenith Milling Co., of Kansas City, two pairs of Allis Rolls in Gray's noiseless frames.

MESSRS. Faul & Buchholz, of Portland, Ind., recently purchased one pair of Allis rolls in Gray's noiseless frame, from Messrs. Edw. P. Allis & Co.

FATH, Ewald & Co, St. Louis, Mo., have ordered a full line of the Stevens roller mills of the sole and only manufacturers, The Jno. T. Noye Mfg. Co.

A. Scrambling & Son, of Victor, N. Y., are putting in Steven's rolls, to be furnished by The Jno. T. Noye Mfg. Co., the sole and only manufacturers.

MR. Listman, of LaCrosse, Wis., lately put in two pairs of Allis Rolls in Gray's noiseless frames, from Messrs F. F. Allis & Co., of Milwaukee, Wis.

THE Ogilvie Milling Co., of Winnepeg, Manitoba, have recently put in additional porcelain rolls, from Messrs. Edw. P. Allis & Co, of Milwaukee, Wis.

MESSRS E. P Allis & Co., of Milwaukee, Wis., recently sold Mr A. Friedenhagen, of St. Charles, Ill, two pairs of Allis Rolls in Gray's patent noiseless frames.

MESSRS. Hackell & Sivill, of Lodi, Wis., lately purchased six pairs of Allis rolls in Gray's noiseless frames, from Messrs. E. P. Allis & Co., of Milwaukee, Wis.

MESSRS. Halliday Bros. of Cairo, Ill., recently put in four pair of Allis rolls in Gray's noiseless frames, from Messrs. E. P. Allis & Co., of Milwaukee, Wis.

MESSRS. Edw. P. Allis & Co. of Milwaukee, Wis., recently sold Messrs. Hutton, Harris & Co., of Auburn, Ill, two pairs of Allis rolls in Gray's noiseless frames.

THE Metropolitan Railroad Co., of Washington, D. C. has ordered of The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., one of the Steven's roller mills for use on corn.

MESSRS. Edw. P. Allis & Co. of Milwaukee, Wis. recently sold to the Union Roller Mill Co., of Bloomington, Ill., one pair of Allis rolls in Gray's noiseless frame.

MESSRS. Kreuger Bros. of Canton, D. T., lately purchased one pair of Allis rolls in Gray's noiseless frames, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

THE Jewell Milling Co., of New York City, has recently urchased a pair of Allis Rolls in Gray's noiseless frame, from Messrs. E. P. Allis & Co., of Milwaukee, Wis.

THE Bass Foundry and Machine Works, of Fort Wayne, Ind., which are handling the Gray patent Roller Mills, manufactured by Messrs. E. P. Allis & Co., Milwaukee, Wis., are refitting the mill of Messrs. Schenck & Lang of Delphos, Ohio, and are putting in the Allis Rolls.

JOHN Ochsner, Waumanda, Wis., have added some new machinery, furnished by The Case Mfg. Co., Columbus, O.

MESSRS. Howell & Hall, of Oswego, Kan., lately put in two pairs of Allis Rolls, in Gray's noiseless frames, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MR. Julius Lehnkind, of Davenport, Iowa, recently purchased one pair of Allis rolls in Gray's noiseless frame, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MR. J. H. Pool, of Rochester, N. Y., recently purchased eight pairs of Allis rolls in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & &o., of Milwaukee, Wis.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., have recently sold Messrs Guthrie Bros. of Superior, Neb., eight pairs of Allis Rolls in Gray's noiseless frames.

MESSRS. G W. Hecker & Co., of New York City, lately put in two pairs of Allis rolls in Gray's noiseless frame, from Messrs. Edv. P. Allis & Co., of Milwaukee, Wis.

MESSRS. H. D. Crane & Co., of Ottawa, Kan., recently put in two pairs of Allis rolls in Gray's noiseless frames, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MR. J. B. Warren, of Wauwatosa, Wis, has placed his order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for eight pairs of Allis Rolls, in Gray's noiseless frames.

Seevers & Anderson, of Baltimore, Md, are increasing their compliment of Steven's rolls, to be supplied by The Jno. T. Noye Mfg. Co., the sole and only manufacturers.

MESSRS. E. P. Allis & Co., of Milwaukee, Wis., lately received an order from Mr. John Schaas, of Papilion, Neb. for an Allis Roller outfit, in Gray's pat. noiseless frames.

DEC. 7. Charles Decker, the proprietor of the grist-mill at Deckerville, Mich., got caught in a revolving shaft and was drawn in an killed. His body was terribly mangled.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., recently furnished Messrs. Richards & Butler, of Indianapolis, Ind., six pairs of Allis Rolls in Gray's noiseless belt frames.

MESSRS. Lukens & North, of Atchison, Kansas, lately purchased two pairs more of Allis Rolls in Gray's noiseless frames, from Messrs. E. P. Allis & Co, of Milwaukee, Wis.

MESSRS. Carl & Blake, of Canton, Ohio, recently ordered of Messrs. Edw. P. Allis & Co.'s Reliance Works, Milwaukee, Wis., one pair of Allis Rolls in Gray's noiseless frame.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis, recently chipped eight pairs Allis rolls in Gray's noiseless frames to San Francisco, for a mill that they are furnishing there.

MESSRS. Geo. Crosby & Son, of Princeton, Ill., recently purchased two pairs of Allis rolls in Gray's noiseless frames, from Messrs. Edw. P. Allis & Co, of Milwaukee, Wis.

MESSRS. Laird, Norton & Co., the prominent lumbermen of Winona, Minn., recently bought a 30 x 42 Reynolds Corliss engine of Messrs. E. P. Allis & Co., of Milwaukee, Wis.

THE Independence Mill Co., of Independence, Iowa, recently purchased a roller outfit in Gray's noiseless frames, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MESSRS. Albrecht & Poggenburg, of Newburg, Wis., recently purchased of Messrs. Edw. P. Allis & Co., of Milwaukee Wis., six pairs of Allis rolls in Gray's noiseless frames.

MESSRS. Fath, Ewald & Co, of St. Louis, Mo., have placed their order with Messrs. E. P. Allis & Co., of Milwaukee, Wis., for ten pairs of Allis Rolls in Gray's noiseless belt frames.

ADDITIONAL Stevens rolls are being put in the mill of Ellis & Knawses, at Evansville, Ind., by the Jno. T. Noye Mfg. Co, of Buffalo, N. Y., the sole and only manufacturers.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., have recently received an order from Mr. G. Ziebold, of Red Bud, Ill., for sixteen pairs of Allis Rolls in Gray's noiseless belt frames.

D. Hagett & Son, at Conococheague, Md., are putting in bran and tailings rolls to be furnished by the sole manufacturers of the Steven's rolls, The Jno. T. Noye Mfg. Co., of Buffalo, N. Y.

MESSRS. Church & Paterson of Sterling, Ill., recently ordered one pair of porcelain Rolls, in Gray's noiseless frame, from Messrs. E. P. Allis & Co., Reliance Works, Milwaukee, Wis.

MESSRS. Panels, Van Patten & Co., of Holland, Mich. have placed their order with Messrs. Edv. P. Allis & Co., of Milwaukee, Wis., for four pairs of Allis rolls in Gray's noiseless frames.

MESSRS. May Weber & Co., of Watertown, Wis., lately placed their order with Messrs Edw. P. Allis & Co. of Milwaukee, Wis,, for two pairs of Allis Rolls in Gray's noiseless frames.

THE Case Mfg. Co., Columbus, O., have the contract of Padgam & Miller of Union City, Mich., for a full gradual reduction mill of break, rolls scalping reels purifiers etc. on the Case sy tem.

MR. B F. Gump, of Chicago, Ill., lately placed his order with Messrs. E. P. Allis & Co., of Milwaukee, Wis., for one pair of porcelain rolls in Gray's noiseless frame, for one of his customers.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., recently filled an order for two pair of porcelain rolls in Gray's noiseless frames, for Messrs. R. G. Waples & Co., of Sherman, Texas.

MESSRS. Edw. P. Allis, & Co., of Milwaukee, Wis, lately received an order from Messrs. Lambert & Bishop, of Joliet, Ill, for a 38 x 48 Reynolds Corliss engine, to run their barb wire fence works.

Charles E. Ellreith, of Syracuse, N. Y., has ordered of The Jno. T. Noye Manufacturing Co, of Buffalo, the sole and only manufacturers of the Steven's roller mills, a concentrated mill and rolls.

THE Case Mfg. Co., Columbus, O., are furnishing Werner Miller & Co., Wright City, Mo., with breaks, rolls, purifiers scalping, reels chest, etc., for a full gradual reduction mill, on the Case system.

THE Hudnuts, of Terre Haute, Ind., recently purchased two more pairs of Allis Rolls in Gray's noiseless frames, for grinding corn, from Messrs. Edw. P. Allis & Co.'s Reliance Works, Milwaukee, Wis.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., have the contract for building a new 125-bbls. mill, for Messrs. Loudenslager & McAdoo, of Newark, Ohio. The mill will contain ten pairs of Allis Rolls.

THE Union Mill Company, of Waterloo, Iowa, who have already a large complement of the Steven's rolls, have placed their order with The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for a double mill.

MESSRS. Tanner, Sherman & Co., of Otter Lake, Mich. recently placed their order with Messrs. Edw. P. Allis & Co's. reliance works, Milwaukee, Wis. for an Allis roller outfit in Gray's noiseless frames.

MESSRS E. P. Allis & Co., of Milwaukee, Wis., have the contract for remodeling mill for Messrs. Hanley Bros., of Petosky, Mich., and are putting in three pairs of Allis Rolls, in Gray's noiseless frames, and one of their new four-break reduction machines.

DEAMINGER Bros. Adrian Mich. have placed their order with the Case Mfg. Co, Columbus, O., for a full line of breaks, rolls, purifiers, scalping, reels, etc., for a full reduction mill on the Case system.

MESSRS. H. A. & L. J. Deland & Co., of Fairport, N. Y., have recently purchased two pairs of Allis Rolls in Gray's noiseless frames, from Messrs. E. P. Allis & Co., of Milwaukee, Wis., to use for grinding soda.

JAS. Purdy, Grand Rapids, O., is putting in the world renowned Steven's rolls for use on bran and germ. The sole and only manufacturers, The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., will fill the order.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., have a contract from Mr. R. Huston, of Evansville, Ind., for furnishing their mill, and are putting in twenty-two pairs of Allis Rolls in Gray's noiseless frames.

THE Case Mfg Co., Columbus O., have furnished M E. Moore of Waterville, Kans., with a line of rolls, breaks, purifier, scalping reels etc., for a full gradual reduction mill on Case system, using no millstones

S C. Wilson & Co., of Alney, Ill., through the ever enterprising Jno Webster, has placed an order with The Jno. T. Noye Mfg Co., of Buffalo, N. Y., for one double Steven's roller mills for use of middlings.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., have the contract for remodeling the mill for the Kenton, Milling Co., of Kenton, Ohio, and are putting in eighteen pairs of Allis Rolls in Gray's noiseless frames.

MESSRS. Edw. P. Allis & Co. of Milwaukee, Wis., recently took the contract to furnish Messrs. J. S. Woodhard & Co's Mill at Urbano, Ohio, and have put four pair Allis rolls in Gray's noiseless frames, in the same.

CAPT. E. W. Pride, the general agent for Steven's rolls at Neenah, Wis., has bagged an order for J. & F. B. Yates, at Berlin, Wis, for bran rolls. The Jno. T. Noye Mfg Co., the sole and only manufacturers, will fill the order

W. W. Warner & Co., proprietors of the well advertised Warner's Safe Remedies, have ordered of The Jno. T. Noye Mfg. Co, the sole and only manufacturers of the Steven's rolls, one pair of rolls for grinding leaves.

MESSRS. Hagerty, Hunter & Co., Peoria, Ill., have the contract for building a 200-bbls. mill, and have ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., twenty pairs of Allis Rolls, in Gray's noiseless belt frames.

THE Bass Foundry & Machine Works, of Ft. Wayne, Ind., recently placed an order with Messrs. E. P. Allis & Co. of Milwaukee, Wis, for an Allis roller outfit in Gray's noiseless frames, for Mr. J. S. Hart, of Decatur, Ind.

MESSRS. J. Q. Halteman & Co., of St. Louis, Mo, recently ordered nine pairs of Allis Rolls in Gray's noiseless frames, for a mill that they are furnishing at Paris, Mo., same were from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MESSRS. Kelly & Bennett, of Rochester, N. Y., have just ordered of Messrs. E. P. Allis & Co., of Milwaukee, Wis., two of Gray's combined Reduction and Separating machines. Tney are refitting their mill to the Roller system.

MESSRS. C. B. Slater & Co., of Blanchester, Ohio, lately placed their order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for two pairs of Allis rolls in Gray's noiseless frames, for Messrs. Jno. Alt & Co., Effingham, O.

MESSRS. Chisholm Bros. & Gunn, of Minneapolis Minn. recently ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., thirty six pairs of Allis rolls in Gray's noiseless frames, for Mills, that the have under construction

MESSRS. Willford & Northway, of Minneapolis, Minn. recently placed their orders with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for nine pairs of Allis rolls in Gray's noiseless frames, for a mill that they are furnishing.

MR. Robert Grimshaw of Philadelphia, has been retained by H. B. Rathbun & Son of Deseronto, Canada, to direct the alterations of engines &c. in there various flour mills, saw mills, &c., where the use about 1,000 horse-power.

MESSRS. E. P. Allis & Co., of Milwaukee, are refurnishing the Roller mills for remodeling the mill of Messrs. McConnell & Kirk, at Findlay, Ohio. The mill when completed will have ten pairs of Allis Rolls in Cray's noiseless belt frames.

AT Prospect, Marion Co,, O, Messrs. Marrow Bros. are putting in Steven's rolls for germ and bran, for which purpose they are unexcelled. The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., the sole and only manufacturers, will fill the order.

MESSRS. Richards & Butler, of Indianapolis, Ind., report a steadily increasing mill furnishing business. They have recently ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., fourteen pairs of Allis Rolls in Gray's noiseless frame.

THE mill of Gulliford Bros. & Co., at Mentor, O., is receiving a full line of the Steven's roller mills, to be furnished by the sole and only manufacturers, The Jno. T. Noye Mfg. Co., of Buffalo, N. Y. It will make a complete mill when done.

THE Case Mfg. Co., Columbus, O., are furnishing Allen & Co., Lenox, Iowa, with rolls and other machines.

WEBBER & Son Omaha, Neb., have put in one of the Little Giant break machines, furnished by the Case Mfg Co., Columbus, O.

MESSRS. Edw. P, Allis & Co., of Milwaukee, Wis., have the contract for furnishing the machinery and engine for the new mill of Heny & Cook of Fond du Lac, Wis. They will put in eight pairs of Allis Rolls, and a 12 x 36 Reynolds Corliss engine.

THE Great Western Mnfg. Co., of Leavenworth, Kan. are doing an extensive business in Mill furnishing in their section. They handle the well known Allis Rolls and have recently placed orders for twenty four pairs, all in Gray's noiseless belt frames.

R. L. Frazee, of Frazee City, Minn., one of the level headed progressive millers of that state, has ordered of the sole manufacturers of the celebrated Steven's roller mills, The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., additional rolls for use on middlings.

E. Hoag & Son, of Manchester, Iowa, have placed an order with The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for additional Steven's roller mills. They have had in use for some time one of Noye's improved concentrated mills, and speaks very highly of its work.

AT Wall Lake, Iowa, Messrs. R. Hammine & Co., have placed an order with The Jno. T. Noye Mfg. Co., of Buffalo, N. Y, the sole and only manufacturers for Steven's rolls for bran and germ. Mr. F. R. Fletcher, the sole representative of the Steven's rolls sent in the order.

MESSRS. Hull, Parker & Co., formerly wellknown in milling circles in Minneapolis, have purchased a mill at Baraboo, Wis., and are refitting it to the Roller system, and have placed their order with E. P. Allis & Co., Milwaukee, Wis., for six pairs of Allis Rolls in Gray's noiseless frames.

MR. J. J. Hennickson, of Conshohocken, Pa., who is doing the millwright work for Messrs. C. & J. Cleaver Chestnut Hill, Philadelphia, visited Milwaukee, Wis., recently and placed his order with Messrs. Edv. P. Allis & Co., of the reliance works, for a full line of Allis rolls in Gray's noiseless belt frame.

MESSRS. Edw. P. Allis & Co., Reliance Works, Milwaukee, Wis., are furnishing the machinery and plans for the new 125-bbls mill of Messrs. Manro, Neyhart & Manro, of Auburn, N. Y. The mill will be a full roller mill, containing thirteen pairs of Allis Rolls in Gray's noiseless frames.

MESSRS. Edw. P. Allis & Co. reliance works, Milwaukee Wis., have the contract for building the new mill for messrs. Carr & Brown, of Hamilton, Ohio. The mil when completed will have a capacity of 250 barrels per day and will contain thirty pairs of rolls, all in Gray's noiseless Belt frame.

MR. A. A. Taylor of Toledo, Ohio, recently put in another pair of Allis Rolls, from Messrs. E. P. Allis & Co., of Milwaukee, Wis. Mr. Taylor is using a Compound Reynolds Corliss engine, also built by Messrs. Allis & Co. to furnish power for his mill, and is making a barrel of flour with 20 lbs. of soft nut coal. This economy has never been excelled, and speaks well for the engine furnished by the Reliance Works.

MESSRS. Walsh, DeRoo & Co.'s Standard Roller Mill, at Holland, Mich., is completed, and running full time. It is fitted up with Gray's Roller mills, and the most modern milling machinery. The mill is driven by steam power, and has the capacity of 200 barrels of flour per day. Abraham Privat, formerly of Milwaukee, is head miller, and J. B. Oggel, formerly of Beloit, Wis., second miller. The shipping facilities of the mill are excellent.

BURNED—Nov. 27, the flour mill of Upham, Son & Co., of Blue Rapids, Ks., The mill, which was much the largest in the State, has been in operation only six weeks since overhauling and rebuilding, during which time sixteen of the patent process rollers were put in. The total loss, counting $12,000 worth of wheat and flour destroyed, will amount to $72,000 on which there was an insurance of $30,000. On this amount $30,000 was on the mill and machinery and $40,000 on the stock. The National Millers' Fire Association carried $10,000 of the Insurance and the Home $5,000. The stone walls, which were four feet thick, are still standing, and will probably be utilized in rebuilding. The mill proper was 56x86, four stories high, and had an easy capacity of 288 barrels of flour per day, or 1,440 bushels of wheat. The partners were Cyrus Upham, S. T. Upham, Henry Flueke and R. S. Craft. Henry Flueke is a resident of Atkinson, where he operated a depot for the sale of the product of the mill. The water power at Blue Rapids is probably the finest in the West. Upham, Son & Co., have a power rated at 150 horse, and will probably rebuild in Blue Rapids on this account.

THE CENTRIFUGAL ERA.

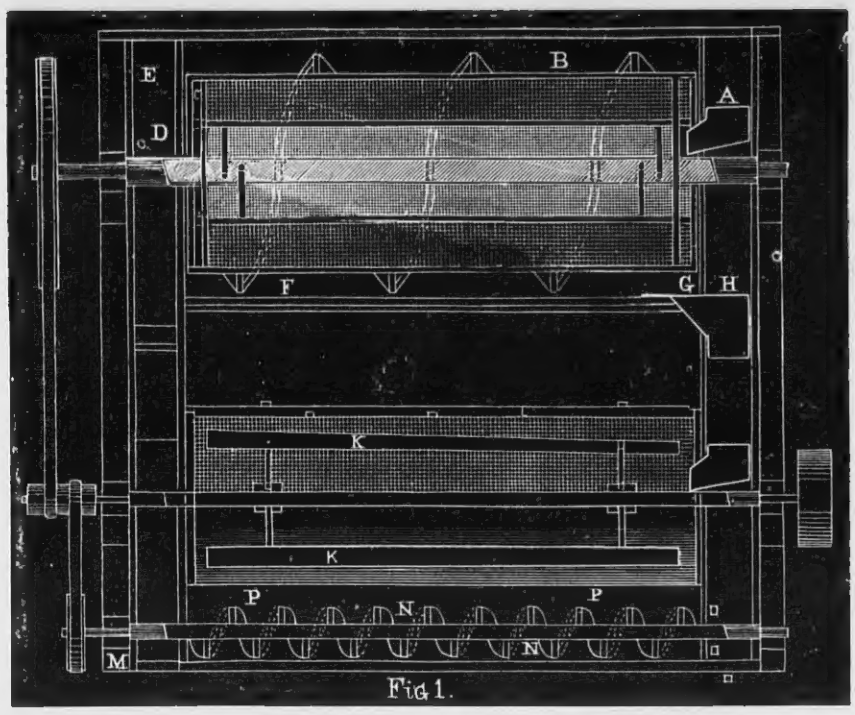


Fig 1.

The Centrifugal system creates a new epoch in milling machinery, and is rapidly becoming popular and indispensible, gradually supplanting the old system as it goes marching along, and so we take pleasure to introduce the Excelsior

CENTRIFUGAL

Flour Dressing Machine.

(Frank Andree's Patent, Sept. 20th 1882.)

FIRST PREMIUM AND DIPLOMA AT MISSOURI STATE FAIR, ST. LOUIS, OCT. 5, 1882.

Our New Double Reels { One for Scalping Bran. One for Bolting Flour. **Our New Double Iron Conveyors** { To Convey and Re-Convey.

Our Two Bolting Frames { To which the cloth is attached, and by having two sets of frames, of different numbers they can be changed in sixty seconds; a great convenience to millers.

Our Great Feature { The bottom reel frame is composed of Zinc instead of Cloth, so that the Bolting Cloth, in the two upper frames, escapes actual wear and tear; hence the expense on cloth is merely nominal the year round, which is very agreeable to millers.

Our Reels excel any other for re-bolting low grades of Flour; handling lumpy and impure material; dusting middlings and bran; flattening germ stuff; finishing tailings and cut-offs; bolting chop from any rollers; separating break-flour; redressing and mixing flour, and they are especially valuable in finishing patent flour.

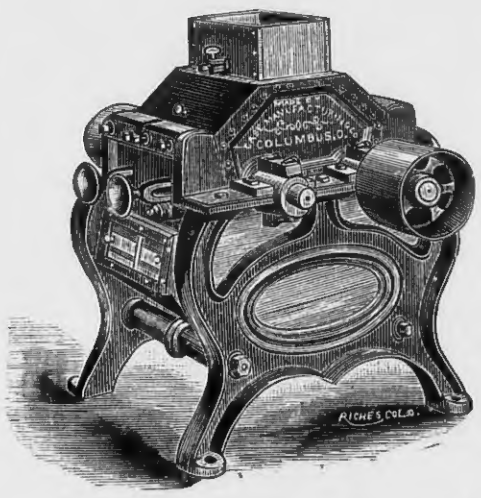
Our Reels have a capacity three times greater than the common cylinder; they take up less space; make a cleaner and whiter flour; leave less waste and are less expensive.

For information and reference apply to

FRANK ANDREE & COMPANY, SOLE MANUFACTURERS, **330 E. DIVISION STREET, Chicago, Ill.**

[Mention the United States Miller when you write to us.]

Our New Year's Card!



The Case Break Machine.

LOWELL, MICH., Dec. 22nd, 1882.

Messrs. CASE MFG. Co., Columbus, O.

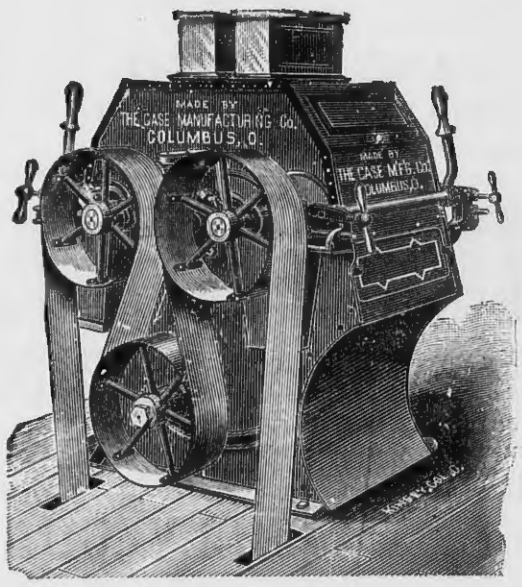
Dear Sirs:

Your favor duly received, and in reply we wish to say that we have delayed giving you our opinion of your system in our mill, not wishing to commit ourselves until we were thoroughly satisfied as to its merits, and we are now pleased to say that we are getting results that surpass our expectations, and that we are very confident can be surpassed by no system of milling we know of. We are using not to exceed $4\frac{35}{60}$ bushels wheat per bbl., and are making a straight grade Flour that equals ordinary Patent with 5 to 6 per cent. low grade. We get about 60 per cent. Middlings Flour that we have yet to see equaled in Winter Wheat Patents—we run a straight grade, leaving this middlings flour all in.

We think your system is a grand success, and predict a brilliant future, first wishing you a prosperous New Year.

We remain yours truly,

WISNER BROS.



The Case Roller Mill.

Address: CASE MANUFACTURING CO.,

COLUMBUS, OHIO.

[Please mention the United States Miller, when you write to us.]

J. H. REDFIELD,

Millwright and Mill Furnisher,

Patentee and general Agent for

REDFIELD'S COMBINED ELEVATOR & PURIFIER.

And the Champion Wheat Cleaning Machinery.

Large stock of Du Four's Bolting Cloth on hand, which we sell lower than can be purchased elsewhere. Cloths made up to order and guaranteed to fit, and be of the best material, and made in the most workman-like manner.

Send for catalogue and price list. It will pay you.

J. H. REDFIELD, Salem, Ind.

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[Mention this paper when you write us.]

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The RICHMOND MILL WORKS, and RICHMOND MILL FURNISHING WORKS are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore to save delay or miscarriage, all letters intended for this concern should be addressed with care to

NORDYKE & MARMON CO.,
INDIANAPOLIS, IND.


Mill Furnishing,
Foundrymen & Machinists.
Established 1851.
MANUFACTURE
MILL STONES.
Flouring Mill Contractors.
Send for Pamphlet.
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[Mention this paper when you write us.]

GANZ & CO.,

Budapest, Austria-Hungary.

We are the first introducers of the Chilled Iron Rollers for milling purposes, and hold Letters patent for the United States of America. For full particulars address as above.

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MEDAL & PREMIUM AWARDED TO

ALCOTT'S TURBINE WATER WHEELS

Most Perfect Turbine in Use.

MANUFACTURERS OF

Circular Saw Mills, Shafting, Pulleys, Hangers & General Mill Machinery.

Stating Particulars of Stream, &c.

Address: **T. C. ALCOTT & SON,**

Mount Holly, N. J.

We have the BEST GATE in EXISTENCE and by it the most Direct Efficient Applications of the Water to the Wheel.

The Wheel is STRONG, DURABLE AND EFFECTIVE. Unsurpassed in Power at "part gate." Warranted to give full satisfaction.

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Milling Made Profitable.

We build mills on any system known. We guarantee a saving of **25 per cent.** on the cost of construction and room occupied by

BOLTING CHESTS.

We handle 45 bushels per hour on one reel successfully.

C. B. SLATER & CO.,
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310, 312, and 314 FLORIDA STREET.

Is furnishing Mills and Elevators in all parts of the country with their superior BUCKETS.

They are UNEQUALED for their SHAPE, STRENGTH and CHEAPNESS.

Leather, Rubber, Canvas Belting and Bolts at lowest market rates. We have no traveling agents. Sample Buckets sent on application. Large orders will receive liberal discounts. Send for sample order.

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